JOURNAL
OF THE
AMERICAN WATER WORKS ASSOCIATION

Vol. 37 **DECEMBER 1945** **No. 12**

Contents

All correspondence relating to the publication of papers should be addressed to

Harry E. Jordan, Secretary
500 Fifth Avenue, New York 18, N. Y.

$7.00 of Member's dues are applied as subscription to the Journal
Additional single copies to members—50 cents
Single copies to non-members—75 cents

JOURNAL

OF THE

AMERICAN WATER WORKS ASSOCIATION

Vol. 37 | December 1945 | No. 12

Relationship of the Utility Operator to the Village Officials

By I. M. Hoover

Supt., Montpelier Water Works, Montpelier, Ohio

Presented on Oct. 26, 1945, at the Ohio Section Regional Meeting, Massillon, Ohio

OFFICIALS in the average village are elected every two years and usually are, with a few exceptions, men of every type of personality and representative of any profession from poolroom loafer to college professor. The mean intellectual level of the group, with few exceptions, is near the mean of the community in which they live. After a term or two in office the pre-election enthusiasm of the officials usually "dwindles out" for they have found that the problems of operating a village are much different from what they appeared to be before the election.

Although the mayor is usually looked upon as a sort of village manager, he is in fact very often limited in legal power which concerns the operation of the utility. He may approve or veto the ordinances which are passed by the council. However, most citizens take all their troubles to the mayor and expect him to correct a taste in the water or a flooded basement and to make sure that the drunken husbands get home and chase the chickens out of the victory gardens.

The village council has many legal duties and powers, but of particular interest to the utility operator are the ordinances which affect the operation of the utility and the appropriation of utility funds for yearly operation and major improvements. In most villages the council follows the recommendations of the board of public works in legislation affecting the utilities, unless there is friction or a lack of co-operation between the two groups.

The board of public works is charged with the complete operation of the utilities, which includes the personnel, the fixing of rates, the collection of revenue and the maintenance and extensions of the utility, and the operator is

directly responsible to this board in his work in the utility.

How can a village operator get along with the village officials?

The operator should know personally each official, especially those on the board of public works. He should know each man's business and how he conducts it, his education, his likes and dislikes and, very important, his weakness, so that the proper approach to each man may be followed in making suggestions for changes or recommending improvements in the utility operation. In nearly all groups of officials in a small town there is usually a leader who controls the majority of the group and it is the operator's problem to know that leader, to work with him and to sell himself and his plans for the successful operation of the utility. This leader may say "no" to an operator's suggestion, or, still worse, he may say nothing and do nothing about it. Then the operator must exercise judgment on when to bring up the subject again, for sometimes it pays dividends to give plenty of time for the "soaking-in" period to work on your man and it should be remembered that most men do not like to be rushed into a decision on a problem of which they know very little. However, if it is an important problem of safeguarding the water supply you can always report to the department of health and ask them to given you help in obtaining a decision on the problem. It has been the author's practice to confer with the health department first and then put the problem up to the local officials for action. If your problem concerns an imminent breakdown of the plant or the lack of material or equipment, report it to the officials with your recommendations, and, if you can get no decision, you are at least on record. Then if the breakdown does occur, the blame will be laid on the officials who failed to take action on your recommendations. Always keep ahead of your officials on such problems; then you can call their attention to it before they have the chance to bring the problem to you, keeping them so busy with your suggestions that they do not have time to look for the little things that might be only an annoyance to you but which may seem very big to them.

You may have an official who has personal antipathies toward certain citizens of your village and if he is called upon to make a decision which affects these "certain citizens," most of the time he will let his personal dislikes rather than the consideration of what is right and fair sway his decision. It seems to be a sort of indoor sport in a small town to try to "get even" with the people who are disliked.

Another type of official is the one who thinks that he is directly in charge of the utilities and that the operator or manager is a sort of "hired man" in the utility organization. This official is full of suggestions, both good and bad, although he has no experience or training in the utility field. This type of man usually has a considerable amount of conceit and wants the citizens of the village to think that he has been responsible for the successful operation of the plant. If the plant does not operate successfully, however, then it is the fault of the operator—"the no-good scoundrel."

The author recalls one experience with the Board of Public Affairs in his own village, on which there was a man who would never favor any suggestion of the operator which was put before the board in a regular meeting. Then the operator once unintentionally

mentioned that he expected to suggest some new equipment at the meeting that night. The board member asked about the reasons for the equipment and seemed to favor the plan, so the operator obtained his agreement to bring it to the attention of the other members of the board that evening. This board member opened the discussion by saying that he had been thinking about the purchase of new equipment for a long time and would recommend that it be done at once. Of course it was purchased. From this incident the operator learned to discuss his problems with this board member before a meeting and let him bring it before the board as his own proposal. It would thereupon always be favorably voted on. This method of getting things for the utility satisfied the ego of the board member, who wanted only the credit for the idea, and for fifteen years it got the things that the operator wanted.

There are other types of officials with whom you may deal. For example, there may be a businessman who condones shady operations in his own business, who will stretch the truth for a thin dime. He may be expected to do the same thing in any decision on a public matter.

Another type of official is the one who changes his mind on a problem every day and the operator never knows how this official will vote when the final decision is to be made. This type of person is usually one who is not equipped for the office to which he has been elected and is afraid to follow or to take any advice from men who can give the right answers to the problem.

There are many more types of officials—the man who will never change his mind when wrong; the person who always appears to be bored in a meeting and who will not give a question the time required to make a fair decision but who keeps wanting to adjourn the meeting and go home; or the official who would rather tell ancient off-color stories than consider the problems vital to the operation of the village utility.

It is the responsibility of the operator to try to find some way to get along with the public officials, for they will never spend much time trying to get along with the operator. They would rather hire a new operator. It has been observed in the operation of village utilities that a very great majority of public officials have been honest, have tried to work for the best interests of the village and have worked many hours for little or no salary. Sometimes I think they are an unappreciated group.

It should also be remembered that there are as many types of personalities among the operators of utilities as among the public officials by whom they are employed, and it might be well for the operator to make a self-analysis to determine if he might make some changes that will help him in his relations with the public officials of his village.

Public Relations in the Water Works Field

By E. L. Filby

Engr., Black & Veatch, Kansas City, Mo.

Presented on Oct. 16, 1945, at the Southwest Section Meeting, Shreveport, La.

EVERY water works man is a daily practitioner in the field of public relations, for he is engaged in essential public service and in such service is the servant of the American public. A servant—yet beloved as any family member. We, as servants, have performed our duties so unobtrusively—so efficiently—that the public has taken us for granted. We have inherited the title of Kipling's "Sons of Martha," handling forever the burdens the Sons of Mary have passed to us—and with the compliance that comes over persons engaged in so-called routine jobs—we do our daily jobs, we see that certain duties are carried out and then we retire within a shell we have created. We have lost the enthusiasm with which we undertook our first public service job; we have lost our pride in performance well done; we consider our "essentiality" something of no importance; we have put our public relations away in moth balls—if you will!

What are you doing in your city to create good public relations? Well, you say, I am giving the public a good safe water, properly conditioned and at satisfactory pressure—24 hours a day, 365 days a year, and for that extra day in leap years—the same service. Right you are—that is the job to which you are devoting your life—a service essential to modern-day civilization and happiness. But, how about telling the folks about it? Toot your own horn, or, if that is personally objectionable, toot your department's horn. But, you say, actions speak louder than words—yes, but who hears about that break on South Main Street at 2:00 A.M. that you had fixed by 6:00 A.M. and so had water service on before the business day started? Who hears about the water department in the case of a bad fire? Right, you do, if the fire department needs an alibi. You hear about it from the "powers that be." But, when you receive word that your water supply has passed all the minute tests of the U.S. Public Health Service and has been fully approved for use in interstate carriers, trains, buses, planes—who hears about that? You do, but who else? The old adage of the beaten path to the developer of a better mousetrap has been modified in this age, and the man with a superior product advertises it—tells the nation all the excellent points of his product. Who toot their horns about service? The railroads, the bus lines, the street transportation system, the electric power industry, the gas companies, service institutions—why in Kansas City, our public library is on the radio by transcription and issues a monthly note about its service to the community. All "service" institutions—why not the water department?

Public relations—let's reverse it—relations with the public. How are your relations with Mr. J. Q. Public? Does he know of your plant, your system, your problems, your accomplish-

ments? Or are your relations with him limited to hearing him growl about that $1.02 minimum bill which he stops by to pay once a month? And when it becomes $1.75 because Johnny Jr. left the hose running does he howl! You hear about it then, and there is your opportunity to make a staunch supporter or a disgruntled customer. And the City Dads—the board of directors of the corporation in which every citizen is a stockholder—do you report to them regularly and in a manner that holds or creates interest? Or do you turn in a maze of figures no one is especially interested in? You produced 16,432,000 gal. last month and got paid for 12,650,000. That doesn't sound very exciting, but you could make it "newsworthy" by saying that you were paid for only 77 per cent of what was delivered to the system and 23 per cent, or nearly one-quarter, was lost or not recorded on the cash register. Or, if you tell that last month every man, woman and child used 185 gal. of water per day as against a seasonal normal of 115 gal., someone will ask why, and there is an opportunity to show that for the 106 flat rate services you received $106 in revenue and a like number of metered customers produced $156 in revenue. "Hm," will come the response, "$50.00 a month more. Maybe, Jim, you had better start metering those flat rate users—start with the schools and larger residences."

Your salary, you may say, is a personal matter. It is. But it is also a public matter, for it is given in public records of budgets, payrolls, etc. When you had to give common labor twenty cents an hour more last year to hold the few "good" men left, did you get a raise in like proportion? Perhaps you are a "good" man too—well, did you get a raise . . . before the war? Let us see. Your system is a small one, worth $600,000 at pre-war prices. A $600,000 investment in charge of a $2,800-a-year superintendent. Darn that word—let's change it to "manager" and let's change the salary to one that goes with such responsibilities. Your board consists of business or professional men. They know what a manager is—one who controls, directs, conducts, guides, administers—says Webster. Surely 1 per cent per year is quite reasonable for the administration of a $600,000 investment. That would be $6,000.

The American Water Works Association, through its Board of Directors, has become interested in public relations—in all the manifold aspects of the problem—from salaries paid to men in the industry to what is being done to sell ourselves and our organization to the general public. What can the A.W.W.A. do to promote the welfare of the water works man and to secure the just recognition of his value to the community? There is no idea of a "union" in the present-day sense of the word, but there is an idea that by working at the human side of the business we may benefit every man in the industry whether a member of A.W.W.A. or not. If, by working at national, state and local levels, we can secure the same social security benefits for the man at a municipal water plant job as pertain to a similar job under private ownership, then we have helped every one in our chosen profession. If we can instill into the mind of our humblest worker in the pipeline crew a sense of satisfaction of a public project well done; if we can create in the general manager a sense of pride in his men, their dependability and their performance, then the water works profession is well along the road to

good public relations. Let us strut a little, let's be proud of our war record —one industry without strikes—one industry with no failure of performance charged against its record. Let us be proud of our department—our work. But, if we get an inflated ego, all we have to do is line up our automotive equipment beside the fire department's equipment. The fire chief's car is shined and polished till it fairly glistens, and the fire trucks are immaculate—the tools bright, clean and in place. How does the water department's equipment compare? Is it worthy of the water department of Xville? And, did you ever notice, the fire department is in uniform?

Advertising, yes, sir, the fire departments have "sold" themselves to the public, and yet without plenty of water "on tap," where would the fire department shine? So how about making a friend of that cub reporter who covers the City Hall—give him a story now and then—human interest—as when Tom Amiss was presented a watch after 40 years of service in the department (historical), when you installed the 500 or 25,000 meters in your system (factual), when you topped the 1-mgd. pumpage or the 50-mgd. mark. Perhaps he will prepare a series of articles for Sunday editions on the public services of the community and the water department will be the "lead" write-up. The history of the Xville water department—there is many a story through the years of development—peace times, war, drought, flood, fire, disaster.

And how about slicking up the plant, the pump station and the pipe yard? Make it a beauty spot as well as a utility unit—oh, yes, they can go together—and you'll be surprised at the result. A few dollars for shrubs, plants and lawn will yield handsome dividends in good will when John Public drives a visitor past the plant and proudly comments, "that's our water plant." Bring a few rose slips to the City Dads or some bulbs to the old folks' home—do a little "apple-polishing" if you will—we are all human and we like attention. Trifles make perfection is one radio slogan—and so the little trifling items count.

Enter a water works team in the businessmen's bowling league—and don't forget petite Miss Cashier can smack Louie just as well as Big Tim of the pipe gang. A few white shirts with WATER DEPARTMENT in blue letters on the back will do a lot towards creating understanding. Ditto for soft ball leagues.

And so we could go on. Take that PAY HERE! sign down and replace it with CASHIER. You'll get your money just as easily with a pleasant smile and greeting as you will with a gruff "You owe it—pay up" attitude. Start smiling at the citizen stockholders. Invite them to see what they own, and how you protect their interests. Put a little honey into that telephone call. "Yes, sir, Mr. Smith, I'll do my darnedest to get that service turned on for you in the morning—yes, sir"—and then go do it. Don't say, "you'll have to fill out an application" or "we'll get at it as soon as we can." Remember, Mr. Smith is a part owner of the water works! Put the water department out front in public service in your community and, believe it or not, you will pull yourself up by your own bootstraps until you are the respected leader and the City Dads ask *you* what they can do for *you!!* That would be the millenium, you say. Nonsense—it is just around the corner and if you start a sound program of public relations you will be surprised how soon you reach that corner.

Customer Accounting

By Marshall S. Dutton

Supt. of Water, Oak Park, Ill.

Presented on Oct. 30, 1945, at the Illinois Section Meeting, Chicago, Ill.

CUSTOMER accounting deserves special consideration and thought as it becomes increasingly evident that profits of a water department must be available not only for the maintenance and improvement of the water system, but also for the augmenting of funds used to provide other municipal services. Therefore, in the proper administration of a water department, after careful control of water supply, which includes the control of losses due to underground leakage and under-registering meters, the prompt billing and collection of customer accounts are important.

The village of Oak Park is a residential community, $4\frac{1}{2}$ sq.mi. in area, with a population of 69,000 and a total of 12,013 meters in service as of Dec. 31, 1944. Water is purchased from the city of Chicago on a metered basis and is distributed through a booster station which has on the system a 5-mil.gal. reservoir and 107 mi. of water main. The system is 100 per cent metered. The total gallonage pumped in 1944 amounted to 2,088 mil.gal. Losses and unaccounted-for water during this year amounted to 14.26 per cent of the total gallonage purchased. Of the 12,013 meters in service, 11,528 are billed quarterly and 485 are billed monthly. Total receipts for 1944 amounted to $415,209. A total of 51,700 meters were read at a cost of $5,244. The cost of collecting delinquent accounts was $2,668.

The personnel of the department includes two meter readers who are required to read approximately 80 to 120 meters daily, except Saturday, to make one recall for overs and to note in the meter book any indication of leakage on the service, which is indicated by testing with an aquaphone when each meter is read. Some success has resulted in obtaining meter readings by using a return postcard, which is left for the customer to send in with his reading of the meter on a reproduced dial, thus reducing the necessity of further recalls and the use of estimated readings.

So that the office personnel may keep a complete check of progress, charts are posted for ready reference (Figs. 1, 2, 3, 4). Individual quarterly accounts are coded; e.g., 4-235 is 235 Wenonah Avenue. Individual monthly accounts are also coded; e.g., S-189 is Account 189 on South Side and 37-540 is 540 Madison Street.

The monthly accounts require two code numbers since the meter books are arranged for proximity of stops.

Preliminary to the billing of accounts, a proof must be made of the open accounts in the control to be billed. At this time, also, the discount is forfeited on past due accounts, all of which is a machine operation. It

CODE OF CONTROLS

~ SOUTH SIDE ~

CONTROL NO.	KEY NO.	STREET
1	1	MAPLE
	2	WISCONSIN-SO. MARION
	3	PLEASANT PLACE
	4	WENONAH
2	5	HOME
	6	CLINTON
3	7	KENILWORTH
	8	CARPENTER
	9	GROVE
4	10	OAK PARK
	11	EUCLID
5	12	WESLEY
	13	CLARENCE
6	14	EAST
	16	SCOVILLE
7	17	GUNDERSON
	18	ELMWOOD
8	19	RIDGELAND
	20	CUYLER
9	21	HIGHLAND
	22	HARVEY
10	23	LOMBARD
	24	TAYLOR
11	25	LYMAN
	26	HUMPHREY
	27	AUSTIN
12	29	SOUTH BLVD.
	30	PLEASANT
	31	RANDOLPH
	32	WASHINGTON
	33	MADISON
	34	HARRISON
	35	FLOURNOY
	36	GARFIELD
	37	FILLMORE (A)
	37	ROOSEVELT (B)

~ NORTH SIDE ~

CONTROL NO.	KEY NO.	STREET
13	38	HARLEM
	39	MAPLE
	40	MARION
	41	BELLEFORTE
	43	FOREST
14	44	WOODBINE
	45	KENILWORTH
	46	GROVE
15	47	OAK PARK
	48	EUCLID
	49	LINDEN
16	50	COLUMBIAN
	51	EAST
	52	SCOVILLE
	53	FAIR OAKS
17	54	ELMWOOD
	54	ROSSELL (A)
	54	EDMER (B)
	55	RIDGELAND
18	56	CUYLER
	57	HARVEY
	58	MAPLETON
19	59	LOMBARD
	60	HAYES
20	61	TAYLOR
	62	HUMPHREY
21	63	AUSTIN
	64	NORTH BLVD.
	65	WESTGATE
	66	LAKE
	67	HOLLEY COURT
	68	ONTARIO
	69	ERIE
	70	ELIZABETH COURT
	71	SUPERIOR
22	72	CHICAGO
	73	PAULINA
	74	SCHNEIDER
	75	MILLER
	76	IOWA
	77	AUGUSTA
	78	THOMAS
	79	DIVISION
	80	BERKSHIRE
	81	LENOX
	82	GREENFIELD
	83	LE MOYNE
	84	NORTH
23		NORTH & SOUTH MONTHLY MISCELLANEOUS CONTROL

FIGURE 1

TIME TABLE-METER READINGS

	SOUTH SIDE			NORTH SIDE		
	1ST MONTH	2ND MONTH	3RD MONTH	1ST MONTH	2ND MONTH	3RD MONTH
1	S. MAPLE 160		S. HARVEY 280	N. HARLEM THRU N. MARION 255	FAIR OAKS 125	N. TAYLOR 310
2		WESLEY 250			N. ELMWOOD 220	
3	WISCONSIN 220 PLEASANT PL. 5			BELLEFORTE FOREST 260		
4						
5						
6		CLARENCE 210	S. LOMBARD 270		ROSSELL-EDMER 80	N. HUMPHREY 310
7	WENONAH 200				N. RIDGELAND 210	
8		S. EAST 250		WOODBINE 130		
9	HOME 250		S. TAYLOR 280	N. KENILWORTH 175	N. CUYLER 160	N. AUSTIN 100 NORTH BOUL. THRU NORTH AVE. 620
10		S. SCOVILLE 270				
11						
12						
13	CLINTON 280		LYMAN 220	N. GROVE 210	N. HARVEY 270	
14		GUNDERSON 200				
15			S. HUMPHREY 270	N. OAK PARK 151		
16	KENILWORTH 250	S. ELMWOOD 285			MAPLETON 100	
17				N. EUCLID 138		
18						
19						
20	N.S. MONTHLY 200	N.S. MONTHLY 200	N.S. MONTHLY 200	S.S. MONTHLY 300	S.S. MONTHLY 300	S.S. MONTHLY 300
21						
22						
23	CARPENTER 86	S. RIDGELAND 250	AUSTIN 90			
24	S. GROVE 270		SOUTH BOUL. THRU ROOSEVELT 480	LINDEN 150	N. LOMBARD 290	
25						
26						
27		S. CUYLER 265				
28	S. OAK PARK 210			COLUMBIAN 95		
29		HIGHLAND 230		N. EAST N. SCOVILLE 200	HAYES 160	
30	S. EUCLID 240					

FIGURE 2

TIME TABLE ~ BILLING AND CONTROLS

	BILLING			CONTROLS		
	1ST MONTH	2ND MONTH	3RD MONTH	1ST MONTH	2ND MONTH	3RD MONTH
1		S. GROVE 270	N. LOMBARD 290	NO. 1 & 13		
2		COLUMBIAN 95			NO. 5	NO. 9
3		S. OAK PARK 210	S. CUYLER 265	NO. 2 & 14		
4						
5						
6		N. EAST 200 N. SCOVILLE	HIGHLAND 230			
7		S. EUCLID 240	HAYES 160	NO. 3 & 15		NO. 10-20-21
8	S. MAPLE 160	FAIR OAKS 125	S. HARVEY 280		NO. 6	
9	N. HARLEM THRU MARION 255	WESLEY 250	N. TAYLOR 310		NO. 17	
10	WISCONSIN 200 PLEASANT PL. 5	N. ELMWOOD 220				
11						
12						
13	BELLEFORTE 260 FOREST	CLARENCE 210 ROSSELL-EDNER 80	S. LOMBARD 270			
14	WENONAH 200	N. RIDGELAND 210	N. HUMPHREY 310			
15	WOODBINE 130	S. EAST 250	S. TAYLOR 280		NO. 18	
16	HOME 250	N. CUTLER 160	N. AUSTIN 100			NO. 11-12
17	N. KENILWORTH 175	S. SCOVILLE 270	NO. BLVD. THRU SUPERIOR 240			
18						
19						
20	CLINTON 280	N. HARVEY 270	LYMAN 220		NO. 7	
21	N. GROVE 210	GUNDERSON 200				NO. 22
22	S. KENILWORTH 250	MAPLETON 100	S. HUMPHREY 270		NO. 19	
23	N. OAK PARK 151 N. EUCLID 138	S. ELMWOOD 285	CHICAGO THRU NORTH AVE. 400			
24				NO. 4 & MONTHLY NO. 16	MONTHLY NO. 8	MONTHLY
25						
26						
27	MONTHLY 500	MONTHLY 500	MONTHLY 500			
28						
29						
30	CARPENTER 86 LINDEN 150	S. RIDGELAND 250	AUSTIN THRU ROOSEVELT 570			
	3420	4395	4695			

FIGURE 3

BILLING SCHEDULE
PROGRESS CHART

SOUTH SIDE					NORTH SIDE				
NO.	STREET	READINGS COMPLETED	READINGS CHECKED	BILLING COMPLETED	NO.	STREET	READINGS COMPLETED	READINGS CHECKED	BILLING COMPLETED
1	MAPLE				38	HARLEM			
2	WISCONSIN				39	MAPLE			
3	PLEASANT PL.				40	MARION			
4	WENONAH				41	BELLEFORTE			
5	HOME				43	FOREST			
6	CLINTON				44	WOODBINE			
7	KENILWORTH				45	KENILWORTH			
8	CARPENTER				46	GROVE			
9	GROVE				47	OAK PARK			
10	OAK PARK				48	EUCLID			
11	EUCLID				49	LINDEN			
12	WESLEY				50	COLUMBIAN			
13	CLARENCE				51	EAST			
14	EAST				52	SCOVILLE			
16	SCOVILLE				53	FAIR OAKS			
17	GUNDERSON				54	ELMWOOD			
18	ELMWOOD				55	RIDGELAND			
19	RIDGELAND				56	CUYLER			
20	CUYLER				57	HARVEY			
21	HIGHLAND				58	MAPLETON			
22	HARVEY				59	LOMBARD			
23	LOMBARD				60	HAYES			
24	TAYLOR				61	TAYLOR			
25	LYMAN				62	HUMPHREY			
26	HUMPHREY				63	AUSTIN			
27	AUSTIN				64	NORTH BOUL.			
29	SOUTH BOUL.				65	WESTGATE			
30	PLEASANT				66	LAKE			
31	RANDOLPH				67	HOLLEY CT.			
32	WASHINGTON				68	ONTARIO			
33	MADISON				69	ERIE			
34	HARRISON				70	ELIZABETH CT.			
35	FLOURNOY				71	SUPERIOR			
36	GARFIELD				72	CHICAGO			
37	FILLMORE (A)				73	PAULINA			
37	ROOSEVELT (B)				74	SCHNEIDER			
					75	MILLER			
					76	IOWA			
					77	AUGUSTA			
					78	THOMAS			
					79	DIVISION			
					80	BERKSHIRE			
					81	LENOX			
					82	GREENFIELD			
					83	LE MOYNE			
					84	NORTH			

FIGURE 4

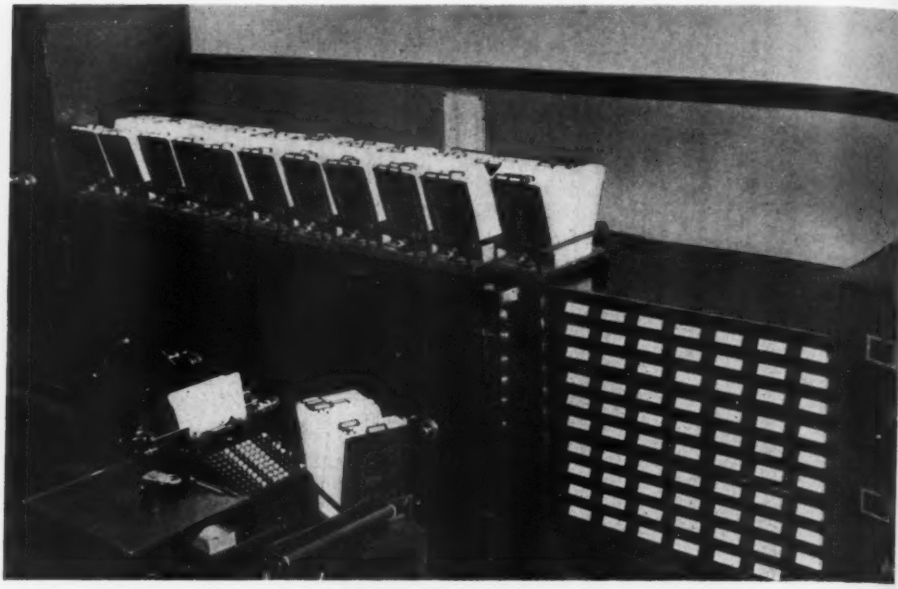


FIG. 5. Customer Ledgers—Cash Posting Machine

FIG. 6. Billing Machine

has been the policy of the Oak Park department to allow the discount on one quarterly bill or two monthly bills during the year when the bill is paid after the discount date.

After the meter books have been checked for low or high consumption and the investigation cards have been prepared, billing is ready to proceed. Ledger sheets are $7\frac{1}{4} \times 11$ in. in trays (Fig. 5), and the billing operation is all done on a billing machine (Fig. 6), which reproduces the statement of the account on a ledger sheet, an original bill and stub, and a record on the journal sheet. The total accounts are divided into 23 controls, averaging about 500 accounts each, separated according to streets so that the amount open in each control is available at all times. Obviously the master control must be in balance with the total of the individual controls, thus showing the total amount of unpaid items. There are sufficient totalizers on the machine to provide, at the close of each day's billing, the amount of water billed, in 1,000 gal., the total gross, discount and net amounts due, arrears and total billing, all of which are recorded on the journal sheet. As a check against the day's work, the amount of water billed, in 1,000 gal., must equal, when the rates are applied, the total gross billing. Buff-colored ledger sheets are used for the quarterly accounts and blue for the monthly accounts. The monthly bills are also printed on blue paper stock.

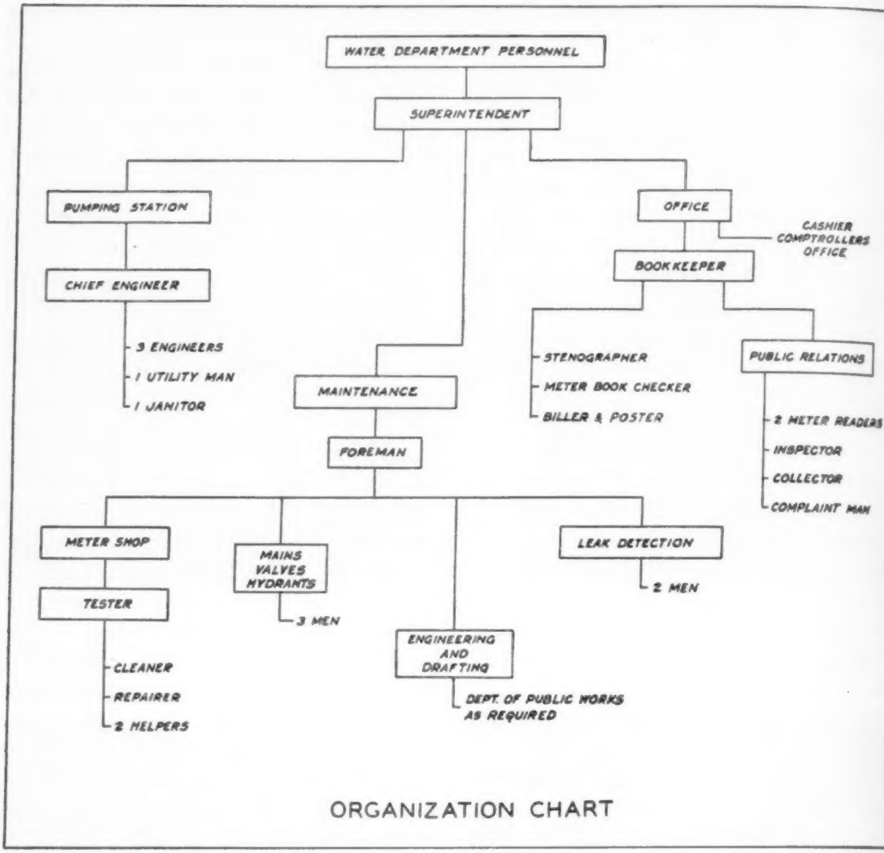
On Mar. 1, 1936, the water rates were increased from $1.75 to $2.50 for a minimum quarterly bill allowing 9,000 gal., with step-down rates for higher consumption raised from 18¢ to 27¢ per 1,000 gal. on the first step. The incentive for the prompt payment of bills was changed from a penalty basis to that providing a 10 per cent discount if paid within ten days.

Early in 1937, it was decided to make a concerted effort to collect delinquent accounts. At that time one of the employees was made a collector and, through a systematic method of delinquency notification and follow-up, many bad accounts which had carried arrears for many years were gradually reduced and finally paid in full. Since the ordinances of the village provide that accounts become delinquent in 30 days, notices in triplicate are prepared. The first is a notification that the account is past due; the second, mailed after seven days, states that no further extension of time is allowed; the third copy is then given to the collector. He in turn calls for collection and has authority to leave a shut-off notice if payment is not forthcoming. It is gratifying to report that the need for discontinuing service for non-payment of bills is negligible.

The results obtained are probably more evident from a tabulation of accounts receivable and dead accounts charged off, as follows:

Year	*Accounts Receivable*	*Accounts Charged Off*
1936	$59,758.59	
1937	46,617.94	
1938	39,961.07	$1,635.67
1939	34,334.05	1,101.88
1940	34,067.26	696.58
1941	26,449.87	191.71
1942	23,621.71	10.95
1943	24,054.77	4.42
1944	25,411.86	Nothing

Many things have contributed to this record of collection. The first factor is a definite program of service to the customer in courteous attention to his complaints, notification to him of leaks on the premises and, if requested, a recording chart of the water consump-



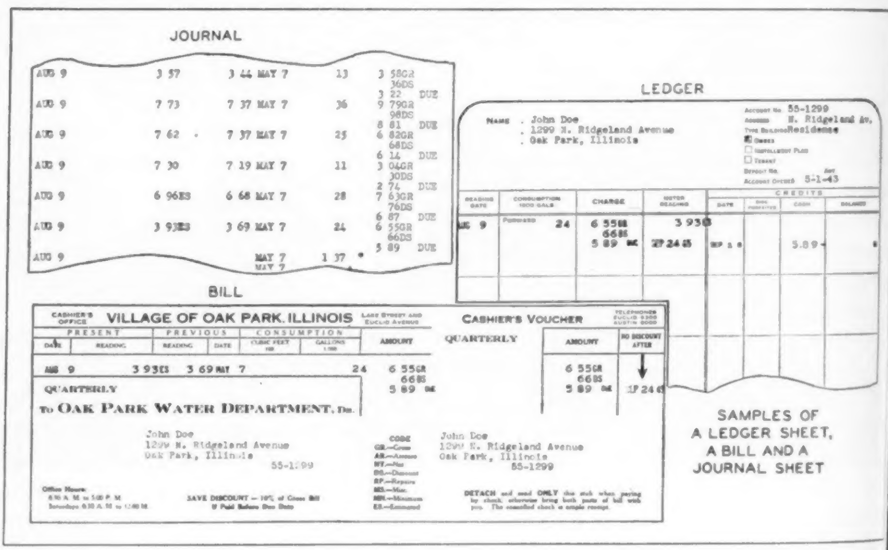


FIGURE 7 (*top*); FIGURE 8 (*bottom*)

tion on the premises during a 24-hour period. We believe that every customer should be water conscious to the extent that he feels he can use all the water he needs, but should not allow it to waste through leaking fixtures, underground piping or faulty refrigerating or air-conditioning equipment.

The second factor is a complete understanding with the governing officials of the village, the president and the board of trustees, that the water department is disbursing a commodity which is accurately measured and delivered to the customer, to the end that special privileges will not be permitted.

The third factor is that a systematic program of control and collection of accounts, having been established, is followed without deviation, to the end that proper credit relations are fully recognized.

Purchase of Surplus Property by Water Utilities

Surplus Property Administration Regulation 14 (issued on November 8) sets up special rules of procedure for various public agencies to obtain surplus materials at a discount of 40 per cent below the established "fair value." Publicly-owned water works properties are entitled to purchase under the special rules.

Details of the operation, however, have not been completely outlined. The U.S. Public Health Service is to establish a "Division of Surplus Property Utilization" which will clear all requests to purchase materials under the special discount terms. As soon as definite information is available concerning procedures, it will be brought to the attention of water works men.

In the meantime, every water works superintendent should ask the *nearest* office of the Reconstruction Finance Corporation or Department of Commerce to put his name on the mailing list, so that he will be informed concerning what is offered for sale in the line of his interest, inspect the material desired, if at all possible, and file notice with the disposal agency that purchase of the items under the special discount privilege is intended. Then, until further notice is received, the Surplus Property Utilization Division of the U.S.P.H.S. in Washington should be told just what is desired for purchase.

No further information is available at this time.

November 15, 1945

Municipal Accounting

By Paul L. Sandberg

Deputy Auditor, City and County of Denver, Denver, Colo.

Presented on Sept. 1, 1945, at the Rocky Mountain Section Meeting, Denver, Colo.

THE subject of accounting, as handled in the Auditor's Office of the City and County of Denver, may be broken down into five sections, as follows:

1. Municipal Accounting Defined.
2. General Duties of the Auditor.
3. The Budget and Appropriations.
4. Summary of the Accounting System.
5. Results.

Municipal Accounting Defined

In the revised edition of the book published by the Municipal Finance Officers Association entitled *Municipal Accounting Statements,* prepared by the National Committee on Municipal Accounting, is given a very clear definition of municipal accounting, which is quoted in part as follows:

> A municipality's accounting system must make it possible, among other things, to determine whether or not the municipality is administering its financial affairs in accordance with legal provisions. This result is partly attained through the establishment of funds.
>
> *Fund Defined.* In municipal accounting, a fund is defined as a sum of money or other resources (gross or net) set aside for the purpose of carrying on specific activities or attaining certain objectives in accordance with special regulations, restrictions or limitations and constituting an independent fiscal and accounting entity. Note that a fund is both a sum of resources and an independent fiscal and accounting entity. Each fund must be so accounted for that the identity of its resources and obligations, receipts and disbursements, and revenues and expenditures is continually maintained. These purposes are accomplished by providing a complete self-balancing set of accounts for each fund showing its assets, liabilities, reserves, surplus, revenues and expenditures. The identification of the assets on the records is, however, sufficient and no physical segregation is necessary; for example, from an accounting standpoint, it is not essential to have a separate bank account for the cash of each fund.
>
> *Distinction Between Use of "Fund" in Commercial and Municipal Accounting.* It is interesting to contrast the use of "fund" here with its use in commercial accounting. In that field, the term designates primarily an earmarked sum of money or other resources. Frequently, no complete self-balancing group of accounts is provided for such a fund. Fund surplus is not shown separately but is included with the general surplus on the theory that the surplus of a fund is part of the surplus of the business, and fund income is, for the same reason, included with the total income of the business. In speaking of a fund, therefore, one must indicate whether he is using the term in the municipal or commercial accounting sense.
>
> *Classification of Funds.* There are various legal bases for the establishment

of municipal funds. Some are set up pursuant to state statutes, others in accordance with municipal charter requirements, and still others in compliance with ordinance provisions. Sometimes, too, funds are created for purposes of financial administration only; for example, because a utility is presumed to be a self-supported enterprise, its finances should be accounted for in a separate fund, even if not required by law. Funds may thus be classified according to whether they are established for administrative purposes or pursuant to legal provisions, and if the latter, whether they are set up in compliance with statutes, charter or ordinances. Such a classification is important when the degree of freedom which the chief executive or the legislative body can exercise in the handling of funds is under consideration. At the same time, it must be remembered that legal funds may play an important part in proper financial administration.

Another classification takes into account both the sources of revenue or receipts and the types of activities which they finance. This classification is valuable from the standpoint of accounting, financial administration and uniform financial statistics; its value is further enhanced by the fact that it makes possible the preparation of statements to show compliance with legal provisions. On this basis, the Committee recommends the following classification of funds: General Fund, Special Revenue Funds, Working Capital Funds, Special Assessment Funds, Bond Funds, Sinking Funds, Trust and Agency Funds and Utility Funds. In addition, there are the general fixed assets and the general bonded debt of a municipality which are not included as parts of any fund but are each set up in a separate self-balancing group of accounts.

Brief Description of Each Type of Fund. The General Fund accounts for all revenues and the activities by them, which are not accounted for in some special fund.

Special Revenue Funds are established to account for taxes and other revenues set aside for a particular purpose. Usually a separate Special Revenue Fund is set up for each purpose for which the revenues are dedicated; for example, if a special tax levy is made for schools, a Special Revenue Fund is set up to account for the school's finances.

Working Capital Funds are used to account for the financing of activities of a manufacturing or service nature such as the operation of an asphalt plant or a central garage.

Special Assessment Funds account for special assessments levied to finance improvements or services deemed to benefit the properties against which the assessments are levied.

Bond Funds are used to account for the proceeds of bond issues.

Sinking Funds are set up to account for the accumulation of resources for retiring term bonds at their maturity.

The purposes of Trust Funds and Agency Funds are to account for cash or other assets held by the municipality as a trustee or agent, respectively. The two classes of funds are so similar that for accounting purposes they are grouped together.

Utility Funds are established to account for the financing of services rendered primarily to the general public for compensation, such as those of water works, electric plants, docks and wharves.

General fixed assets are all fixed assets other than those carried in a Working Capital Fund or a Utility Fund and general bonds are all bonds not payable either from a Special Assessment Fund or a Utility Fund and which are therefore not shown as part of those funds.

General Characteristics of These Funds. The above represent the maximum number of types of funds which a municipality may require. Many will need only a few of them; for instance, if a city does not operate a utility, it will have no need for a Utility Fund. A municipality may, however, have several related funds; for instance it may have many Special Revenue Funds or Special Assessment Funds.

General Duties of the Auditor

An outline of the procedures which are effective in the City and County of Denver follows:

The auditor shall be the general accountant of the city and county. He shall receive and preserve in his office all accounts, books, vouchers, documents and papers relating to the accounts and contracts of the city and county, its debts, revenues and other fiscal affairs not required to be kept by the clerk, and, except as otherwise provided in this charter, or by ordinance, prescribe the mode of keeping, dating and rendering all accounts. He shall provide and keep in his office tables of the finances, assets and liabilities of the city and county, and keep all contracts, names of contractors and names of employees in such manner as to show the department in which they are employed, their respective salaries, powers, duties and method of appointment. He shall require all claims, settlements, returns and reports made to him to be verified. He shall give information as to the exact condition of the treasury, and of every appropriation and fund thereof, upon demand of the mayor, council or any committee thereof.

He shall sign all warrants, countersign and register all contracts, keep a true and accurate account of revenues, receipts and expenditures of the city and county, and each of the different funds thereof, furnishing to each department monthly a statement of the unexpended appropriation of that department; see that rules and regulations are prescribed and observed in relation to accounts, settlements and reports; that no appropriation of funds is overdrawn or misapplied, and that no liability is incurred, money disbursed, or the property of the city and county disposed of contrary to law or ordinance, and shall perform such other duties not inconsistent with the provisions of this charter, as the council may by ordinance require.

He shall keep an official record of all demands audited by him, showing the number, date, amount, name of the original holder, on what account allowed, against what appropriation drawn, out of what fund payable, and by what officer or department previously approved; and he shall allow no demand unless the same has been approved by every department, commission or officer required to act thereon.

He shall keep a register of warrants showing the funds upon which they are drawn, the number, in whose favor, for what services and the appropriation applicable to the payment thereof.

Every demand upon the treasurer, except the salaries of the auditor and his employees, shall, before payment, be presented to the auditor, who shall determine that the money is legally due, its payment authorized against what appropriation and out of what fund it is payable. If he allows it, he shall endorse upon it the word "allowed" with the name of the fund out of which it is payable, affix the date of allowance and sign his name thereto; if he does not allow it, he shall endorse upon it the word "rejected." No demand shall be approved or paid unless presented as required by his charter.

The auditor shall make a verified statement to the council showing receipts and disbursements and the condition of each fund at the close of business on June 30, and shall also make and transmit to the council on or before January 15 a verified report of the financial transactions of the city and county during the preceding year.

The Budget and Appropriations

On or before the first Monday of November in each year the heads of the various departments, offices and commissions of the city and county shall furnish the mayor an estimate in writing of the probable expense to be incurred in their several departments for the ensuing fiscal year, specifying in detail such probable expenditures, including a statement of the salaries of their subordinates. Duplicates of these estimates shall be sent at the same time to the auditor.

The auditor shall, at the same time, also certify to the mayor the amount of money to be raised by taxation to pay the interest on bonded indebtedness, and to provide for the sinking fund.

On or before the first Monday of December in each year the mayor shall present to the council a detailed statement of the amount necessary to defray the expenses of the city and county government, and of each department thereof, for the ensuing fiscal year, stating also the amount to be raised by taxation to pay interest on bonded indebtedness, and to provide for the sinking fund.

The council shall meet in joint session annually between the first and third Mondays in December, and by vote of the majority of the members thereof make a budget of the estimated amounts required to pay the expenses of conducting the public business for the next ensuing fiscal year, based on the mayor's budget, and for the other purpose required by this charter. The budget shall be prepared in such details as to the aggregate sum and the items thereof allowed to each department, office or commission as the council shall deem advisable, subject to limitations in the charter, but the council shall not change any item in nor the total of the mayor's estimate, except upon a vote of two-thirds of each body thereof.

After the final estimate is made in accordance with this procedure, it shall be signed by the mayor and clerk and filed in the office of the auditor. The several sums shall then be appropriated by ordinance for the ensuing fiscal year to the several purposes and departments therein named. The total amount appropriated shall in no case exceed 90 per cent of the amount of money to be received during the year by taxation, estimated upon the assessor's valuation and the tax levy, and from other sources of revenue.

The amount required to pay the interest on bonded indebtedness and provide for the sinking fund shall always be provided for out of the tax on property.

Summary of the Accounting System

Budget and Appropriation

The budget is prepared by the mayor and approved and passed by the city council. A copy is given to the auditor from which a journal entry is made to the general ledger and in detail to the appropriation incumbrance ledger under each department. Any purchase orders that are unpaid at the end of the year are reserved out of that year's appropriation balance and carried over to the ensuing year, which adds to the appropriation. The purchase orders are set up at once against this reserve and incumber the appropriation for such amounts. Additional appropriations and transfers from one department to another are made by ordinance.

Revenue

All revenues are collected by the city treasurer and reported to the auditor

by a daily report and receipts attached. The receipts are checked against the report as to receipt number, revenue code number and amount, and notations are made as to revenue classification to which credits are to be made, as to general fund, and appropriation credits. It is then posted by machine to the revenue ledger according to revenue code classification. This ledger shows the daily posting, the total for the month and the total to date. At the end of the month tapes are made from the various classifications and entered in the cash analysis record from which journal entries are made to the general ledger.

The reports are filed in a binder. The receipts are filed numerically in the auditor's office; both reports and receipts are kept indefinitely. Each department that collects any money, licenses, fees, etc., makes its own report to the treasurer in three copies. The treasurer in turn issues a receipt for same to the department and enters the receipt number on all three copies. The treasurer retains the white copy, the department depositing the money delivers the yellow copy to the auditor and the blue copy is retained by the department. The auditor then checks this yellow copy against the treasurer's daily report of cash receipts. After this has been done the postings are made to the revenue ledger direct from the auditor's copy. With this system the total of any revenue items may be determined at any time.

The county treasurer collects all taxes which are distributed by apportionment to the city and county, state and school district each month. The auditor receives a report from the county treasurer for the month. This report is entered in the tax ledger and a journal entry made from that to the general ledger crediting each fund with its share.

Purchase Orders

A request is made to the head of the department for supplies needed and he in turn makes out a requisition to the purchasing department.

The requisitions are issued in duplicate by the department head with the department name, number and date. The original copy is sent to the purchasing department. The duplicate copy is retained by the department issuing the requisition.

Purchase orders are then issued from these requisitions by the purchasing department. Quotations are requested as provided and are submitted in the regular manner of purchasing routine.

The purchase orders are issued by the purchasing department in five copies and are sent to the following:

Original and duplicate to vendor.

Third copy to auditor.

Fourth copy retained by purchasing department.

Fifth copy to department originating requisition.

Purchase Order Register

The purchase order register is made in duplicate in the office of the purchasing department on loose-leaf sheets and is filed in a loose-leaf binder.

The original copy, with the auditor's copy of the purchase orders attached, is sent to the auditor's office daily. The auditor compares the purchase orders with the register and checks prices and extensions thereon and adds the register sheet and purchase orders on adding machines, retaining the tape for the predetermined total. The total of each must balance.

The purchase orders, together with adding machine tape, are in turn given

to the machine operator and posted on the credit side of the vendor's ledger, which provides a complete record of all purchase orders with each vendor, enabling the auditor to account for all commitments made. The purchase orders are posted alphabetically as a credit, showing number, department, appropriation number and amount. After posting and proving with the purchase order register, they are passed on for the appropriation incumbrance and expenditure ledger.

Appropriation Incumbrance and Expenditure Ledger

The purchase orders are then assorted in numerical order by departments and posted as to purchase order number, date and amount. A proof of the work is obtained and verified with the pre-determined total of the purchase orders as listed from tape of purchase orders and as posted to the vendor's ledger. The total amount posted is carried to the control of the appropriation incumbrance and expenditure ledger, which shows the total to date.

The purchase orders are then filed by departments. As the purchase orders are paid they are taken from the file. Those remaining should balance with the unpaid orders and contracts at the end of each month, as shown on vendor's ledger and appropriation incumbrance and expenditure ledger. Purchase orders are kept for a period of one year or more.

Vouchers

Vouchers are sent in triplicate by the purchasing department to the vendor to fill in statement of account, attach original purchase order, sign oath of claimant and return to the purchasing department.

The purchasing department then checks the vouchers against the purchase order register as to amount, purchase order number and name and sends them to the department making the purchase for signature (A), person receiving goods and (C), head of the department approving voucher for payment. They are then returned to the purchasing department to certify price with approved requisition (B), and sent to the auditor where they are stamped off by date received in purchase order register, audited by accountant showing adjustments, approved, dated and submitted to the auditor for final approvement for payment. They are then arranged according to departments. The purchase order, two copies of voucher, pink and yellow, are numbered to correspond with the number of the warrant to be issued, and listed on the warrant register. This is a loose-leaf record which shows the department, date, vendor's name, warrant number, amount, signature of party receiving warrant and date paid by treasurer.

The machine on which the warrant register sheet is written is equipped with a totalizer which registers the amount of vouchers entered. This total is given with the vouchers to the operator of the check writing machine.

Warrants are issued in settlement of a purchase order or for employees' services on a payroll. Where work is being done under terms of a contract registered and countersigned by the auditor, requisitions and purchase orders are not necessary. Each warrant shows the department or fund drawn upon, to whom payable, amount and purchase order number or for service. Warrants are written upon a check writing machine, equipped with totalizer, thus giving the total of warrants to check

with total on warrant registered or payroll. These must balance.

A notation is made of the amounts and numbers and this notation with the vouchers given machine operators who enter them on the appropriation incumbrance and expenditure ledger which shows amount of payments issued against departments, showing purchase order number, date, voucher number and amount. Vouchers having adjustments or changes in the original amount of purchase orders are also posted on the appropriation incumbrance ledger, thereby making the vouchers and purchase orders agree. The vouchers are then re-assorted alphabetically and posted as a charge on the vendor's ledger, giving date, purchase order number, warrant number, amount and adjustments. The total must check with that posted on appropriation incumbrance and expenditure ledger. The balance as shown on the vendor's ledger sheet represents the unpaid contracts, or the amount owing the vendor. After each run of vouchers the total is posted on the control; the difference between the total debits and credits shows the total outstanding purchase orders, which agrees with the unpaid purchase orders as shown on the appropriation incumbrance and expenditure ledger. This is checked at the end of each month with the appropriation incumbrance and expenditure ledger as to purchase order number and amount. Those unchecked on the incumbrance ledger indicate the unpaid incumbrances against the appropriation. Both the appropriation and vendor's ledgers are reconciled with total of unpaid purchase orders on file.

Expense Recapitulation

An expense recapitulation, designed to complete in one operation the distribution of expense for each appropriation account, is made monthly. This is made direct from the vouchers by departments to separate expense ledger sheets as to expense code, such as "A-1" Supervision; "B-1" Stationery and Office Supplies, etc., showing month, amount and total to date; thus giving an itemized statement of expenditures to date. The expense recapitulation is balanced with the total of all disbursements. The compilation of departmental annual reports and the detail for budget estimates is available from proven figures at all times.

The analysis of disbursements for warrants, coupons and bonds, issued and redeemed, is made monthly from daily reports. From this analysis the journal entries are made and posted to the general ledger.

Warrants

Warrants are sent to the department issuing requisition or payroll for countersignature after which the register is completed for voucher warrants, with the date returned from the department and number and payroll warrants checked with the payroll. The auditor's signature is affixed and the warrants are ready for delivery to the vendor or employee.

If the warrant is called for by vendor or agent the register is signed; if mailed, a numbered remittance slip is written, giving number of warrant, department and amount. This number is entered on the register and the duplicate slip filed. Payroll warrants are signed for by employee drawing same.

This total is also entered in the warrant issued book daily by date, first and last warrant number and carried for the month, then entered in the analysis of disbursements and journal entry made to general ledger.

Payrolls

Payrolls are prepared in duplicate in the departments. The original copy is forwarded to the auditor's office and the other is retained by the department. The name, title and rate are compared with a certified list; extended, calculated, audited and allowed by the auditor. Payrolls are numbered to correspond with warrant numbers. A different series of numbers and colors are used on payroll warrants to distinguish them from voucher warrants.

At close of each payroll period a recapitulation is made for each payroll showing the expense distribution, which is posted to the expense and appropriation ledgers. This recapitulation also shows the number of employees.

Report of Canceled Warrants

This report is made in the office of the city treasurer in triplicate; the original and two duplicates. Canceled warrants and two copies of the report are delivered to the auditor's office daily. The warrants are checked with the report and for endorsements, stamped off the register of warrants drawn and payrolls, showing date paid by the treasurer.

This report is entered daily in the warrant redeemed book by funds. At the end of the month the various totals are entered in the analysis of disbursements and from that a journal entry is made to the general ledger.

At the end of the month the warrants not stamped off are shown as outstanding and are carried on the auditor's records until such time as they are presented for payment. The amount outstanding is reconciled with the balance of warrants payable account on the general ledger.

Bonds and coupons are redeemed by the treasurer and paid for by cash and charged to the various funds. There are no warrants issued for the redemption of bonds and coupons. Payment of bonds and interest coupons are the *only* disbursements authorized by law to be made otherwise than by auditor's warrant.

The treasurer issues a report to the auditor with the canceled bonds and coupons which are checked with the report and also checked with the bond register as to date and amount. All canceled warrants, bonds and coupons, after being checked by the auditor, are sent to the city clerk for filing.

Public Library

The only exception in the conduct of the public library account is that this department issues its own purchase orders and does its own purchasing.

Board of Water Commissioners

This department is operated the same as the city and county except it has its own purchasing agent, writes its own payroll warrants, which are checked and signed by the auditor. A sub-ledger and general ledger are carried separate from the city and county in the auditor's office. Purchase orders and vouchers are the same as for the city and county.

Controls

The general controls govern the departmental and detail accounts and complete the final posting operation. The controls should be in balance daily. Reports are compiled from the general ledger, revenue ledger, appropriation incumbrance and expenditure ledger, appropriation warrant issued ledger and redeemed warrant book and cash

and disbursement analysis which are the auditor's statement of appropriation funds, auditor's revenue statement, auditor's statement of available cash and auditor's annual report.

The statement of available cash and statement of appropriation funds and revenue statement are completed promptly. This information is available each month for comparative purposes and as a guide toward determining future appropriations.

Results

The results may be summarized as follows:

All accounts are in balance daily, affording an immediate opportunity to take up any question about an account with a department head or vendor.

There is satisfaction in knowing that the balances and totals are always proved figures. This information is available when needed.

The department controls and expense recapitulation reflect an analysis of cost by departments, subdivided by twelve group classifications, which in turn are subdivided into from 1 to 39 sub-accounts, enabling the use of a complete cost basis with which to analyze appropriation estimates in the budget.

The revenue accounts are detailed under nine groups.

The control of the budget and appropriations commences with the beginning of the year instead of delaying until the completion of the previous year's reports, thereby insuring the continuous uninterrupted control so necessary to regulate the problem properly.

Sales Engineers' Viewpoint on Tendering for Water Works Equipment

By William Storrie

Cons. Engr., Toronto, Ont.

Presented on Mar. 20, 1945, at the Canadian Section Meeting, Toronto, Ont.

IN an effort to secure the viewpoint of sales engineers and contractors on tendering for plans and specifications prepared by municipal and consulting engineers, a round table discussion, under the chairmanship of the author, was held at the last meeting of the Canadian Section. The object in view was to give those tendering on municipal works an opportunity of stating frankly what they thought of certain clauses in the usual form of specifications and tenders. It was hoped that the discussion would be wide open and result in the establishment of a more standardized form of tendering than exists at the present.

Unfortunately those asked to participate in the discussion proved somewhat reticent in expressing their views. The questions asked and the answers obtained are given in the following statements, which have been supplemented to a considerable extent by the author's own opinions.

Question 1. Are engineers justified in asking tenderers to deposit a sum of money for the loan of plans and specifications to enable a tender to be submitted

(a) When the sum deposited is refunded to tenderers when plans and specifications are returned?

(b) When the sum deposited is not returned to tenderers?

The consensus of opinion indicated that all tenderers should be called upon to deposit a sum of money at the time the plans and specifications were taken out for tendering but that this sum should be refunded to the tenderer once the plans and specifications have been returned in good order.

Question 2. Should a tender bond be accepted in place of a marked check when a tender is submitted?

Tender bonds should not be accepted on the ground that in many cases bonding companies are often asked at the last moment to furnish a bond to enable a tenderer to submit a tender without having an opportunity to ascertain the financial standing of the tenderer. Rather than turn down the prospect of being asked later on to furnish a contract bond the bonding company would issue the tender bond, which afforded small protection. This condition usually arises in the case of smaller contracts.

Question 3. Should a contractor be allowed to deposit a sum in cash or money bonds satisfactory to the municipal treasurer in place of a surety or performance bond usually provided by a recognized guarantee bonding company authorized by law to carry on business in Canada?

The answer is yes.

Question 4. Should an "unbalanced" itemized tender be rejected?

The answer is yes. A case was cited where an itemized tender amounted to $1,000,000 in which all items carried out in the initial stages of the construction work were priced so high and the later items so low that when about one-third of the actual work was completed the estimate would indicate, at the unit prices stated, that two-thirds of the contract sum had been completed. This enabled the contractor to finance the whole contract based on the excessive payments made during the early stages of the construction work. This also produces a dangerous possibility if the contractor is financially unsound and he finds that money would be lost in the contract if he completed same.

Question 5. Should the municipality be held responsible for payment of materials when contracts are awarded to construction companies, which includes the furnishing of all such materials by the contractor?

The answer to this question is no. The general practice, however, appears to be that in water main contracts the municipality purchases the pipes, special castings, valves and hydrants and furnishes same to the contractor employed for excavating the trench and laying the mains.

Question 6. Should tender forms stipulate that material be delivered on the job; for instance, in the case of water main pipe, should the suppliers' price include delivery strung along the trench wherever possible, or merely F.O.B. truck at site of construction?

The answer to this depends entirely on the local conditions. If the location of the water main is within trucking distance from the foundry then the pipe should be strung out along the trench by the contractor furnishing and delivering the pipe. If the location of the main is such that the pipe has to be delivered from the foundry by freight train then the contractor supplying the pipe should not be called upon to transport the pipe from the freight car to the site. It was emphasized, however, that under such type of contract the delivery of the materials should be arranged so as to keep just ahead of the laying of same, thus avoiding the danger of contamination and possible deterioration of the materials when left lying on the ground for some considerable period ahead of the laying of the mains.

Question 7. Can tendering on equipment by sales engineers be likened to a game of poker?

This question brought out a considerable amount of discussion which is summarized as follows:

There used to be a saying that it was the successful tenderer who lost the money. The equipment distributor, through his sales engineer, spends considerable time, money and effort in compiling for the municipal and consulting engineers general information concerning prices, weights, dimensions, characteristics, etc. Then the engineer draws up his specifications from the information supplied and incorporates them in a general contract, which makes it necessary for the sales engineer to start all over again and go over the requirements with the tenderers submitting their prices to the general contractor. Often such information has to be supplied to many tenderers. After the general contract has been awarded the sales engineer has to make another start with the general

contractor due to his playing the equipment distributors one against the other, thus making it like a game of poker. Finally the distributors fall out one at a time and the one who whittles his price the most gets the order, but there is nothing left in it for him.

It was the opinion that the equipment distributor should not have to tender to the contractor but direct to the utility or user. Tendering on this basis would still be competitive, but the distributor would have the satisfaction of knowing that his offer was being considered by the users who would classify and consider the tenders from the angles of first cost, suitability, reputation and service. The results would be a reasonable return to the equipment distributor for services rendered, a better job for the user of the equipment and a tendency to keep the general contractor confined to his own business.

Some of the equipment distributors did not agree with the above but the consensus of opinion appears to be that there was room for improvement in calling for tenders for equipment.

Question 8. As a general practice should tenders for equipment be advertised?

The answer to this question depends entirely on the circumstances. If tenders are called for some particular type of equipment, and it is known that only two firms can produce it, there would be no point in advertising.

The general policy appears to be that with some exceptions the calling for tenders should be advertised.

Question 9. Should bids be considered if alternates are included proposing the furnishing of materials other than those included in the specifications?

Unless specifically stated it was generally felt that tenders including alternates for furnishing certain materials and equipment should be allowed.

Question 10. Should contractors be required to stipulate completion date on job bids and be forced to accept a penalty for non-compliance?

Tenderers should be called upon to state the time of completion in their tender form. Court decisions in certain parts of Canada indicate that if a penalty is provided for non-completion within the time stipulated in the contract this can only be done by offering a bonus for completion ahead of the stipulated contract time.

Question 11. Should contractors be given assurance in the conditions surrounding specifications that the contract will be awarded to the lowest bidder providing he can prove financial responsibility?

In municipal work whether or not a contractor is financially sound the engineer is called upon to let anyone take out plans and specifications who desires same. Financial responsibility is not the only guiding factor in determining who should be awarded the contract. If an engineer's experience with a particular tenderer is such that he cannot recommend the acceptance of such a tender, then he is justified in recommending against it. Under such conditions the engineer should not be called upon to state in his specifications that "The contract will be awarded to the lowest bidder, providing he can prove financial responsibility."

The specifications usually state that the municipality reserves the right to accept the lowest of any tender or reject all tenders.

Question 12. Should a contractor be expected to place on his payroll an inspector working for the interests of the engineer for the duration of a specific job?

The principle involved in such an arrangement should not be countenanced for one moment. The inspector on the work is employed to see that the plans and specifications prepared by the engineer are carried out and an inspector under those conditions should not be paid by the contractor.

It is admissible to insert a clause in the contract to the effect that, if the contractor fails to complete the work within the time stipulated in his contract, he will have deducted from his final contract sum the cost of providing an inspector over the period beyond which the contractor undertook to complete the work. In this case there is no transference of money between the contractor and the inspector.

Question 13. Should the specifications clearly stipulate that no extras will be allowed on the job?

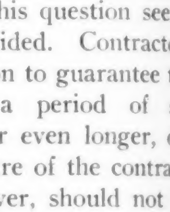
If it is stipulated that no extras will be allowed on the contract the engineer in reality is calling upon the contractor to guarantee the engineer's specifications and possibly the quantities. Few contracts are completed without some unforeseen circumstances arising.

Question 14. Should the engineer clearly stipulate what constitutes "rock"?

It was felt that as far as possible the term "rock" should be defined. In some specifications excavation is defined as including all types of material that may be encountered and the contractor is in such a case called upon to make such investigations as he can before submitting his tender concerning the nature of the material to be excavated. Rock is a hard material to define but every effort should be made to make clear what the intention of the specifications is regarding the material to be excavated.

Question 15. Should contractors be expected to maintain a system or an extension to a system for a period of one year after completion of a specific project?

The opinion on this question seems to be somewhat divided. Contractors should be called upon to guarantee the workmanship for a period of six months, one year or even longer, depending on the nature of the contract. A contractor, however, should not be called upon to maintain the system from any defect that may arise when it can be shown that same is not in any way due to his work. For instance, if an obstruction appears in a sewer, because some material has entered same, and is not in any way a result of the construction work, then the contractor should not be called upon to remove such obstruction at his own expense.



Taxation of Municipal Utilities

Abstract of Ohio Supreme Court Decision No. 30128

BY a five (Weygandt, Turner, Hart, Matthias and Bell) to two (Zimmerman and Williams) decision, the Supreme Court of Ohio, in June 1945, ruled that the real and personal property of the city of Cleveland, Division of Municipal Transportation, was not exempt from taxation.

Subsequent to this decision Ohio County Auditors have been asked to appraise and place upon the tax duplicate the property of the various municipally-owned and -operated water supply systems. The far-reaching import of this decision on water supply systems (and possibly sewage disposal systems under Sewer Rental Law Operation) makes it imperative for those interested in the management of water supply and sewage disposal to give careful thought thereto.

The case came to the Supreme Court on appeal by the Cuyahoga County Auditor and the Cleveland City School District from the Board of Tax Appeal's conclusion that the property of the Cleveland Traction System was exempted from taxation upon the authority of *City of Toledo* v. *Jenkins et al., Board of Tax Appeals*, 143 Ohio St., 141.

The syllabus states:

> Municipally-owned real estate used in private or proprietary function—General Assembly without constitutional Authority to exempt same from taxation —Municipality forfeits immunity from taxation upon entering private competitive business—Personal property used for municipally-owned private competitive business, not exempt. . . .

Majority Decision

A paraphrase of the majority decision written by Judge Bell follows:

This public utility was purchased by the city of Cleveland. The money required was derived from the sale of mortgage revenue bonds.

The city owns and uses in the operation of its transit system both real and personal property. Therefore, two separate and distinct questions must be determined: (1) Did the General Assembly possess authority to pass general laws to exempt from taxation the real estate here in question? (2) Did the General Assembly, by the provisions of Secs. 5351 and 5356, General Code, exempt from taxation the personal property here involved?

The power of the General Assembly to pass general laws to exempt real property from taxation is limited by the provisions of Sec. 2, Article XII, of the Constitution; as to personal property, the power of the General Assembly to pass general laws to exempt such property is limited only by Article I of the Constitution.

Sec. 2 of Article XII amended by a vote of the people, effective Jan. 1, 1934, to read in part as follows:

". . . general laws may be passed to exempt public property used *exclusively* for any public purpose. . . ."

The language of Sec. 2 of Article XII is not a grant of power to the General Assembly but is a limitation upon the general power of that body to grant tax exemption to real property only.

The constitutional provision relative to exemption of real property from taxation is neither self-executing nor mandatory and in the absence of legislative action all property of the state and its political subdivisions, no matter how used, would be subject to taxation.

What is meant by the phrase used in Sec. 2, Article XII, "general laws may be passed to exempt . . . *public property used exclusively for any public purpose"?*

It is generally recognized that the powers and functions of municipal corporations are divided into two classes: (1) public or governmental, and (2) private or proprietary. It is equally well recognized that municipally-owned property used in carrying on a private or proprietary function *for profit* is usually required to contribute its proportionate share of the cost of government.

In 37 Cyc., 877, the rule is stated thus:

> There is no implied exemption from taxation of property owned by a municipal corporation, but which is not devoted to public or governmental uses, but held by the municipality in its private or commercial capacity and *as a source of profit or to serve some mere convenience of the citizens.*

By the language, "used exclusively for any public purpose," we feel quite sure it is not intended that public property held and used for a purely private purpose and for private gain should be granted exemption from taxation. This conclusion is fortified by the language found in a unanimous decision of this court, wherein it is said:

> The description of municipal property which is exempt from taxation indicates with unmistakable accuracy that the exemption is to extend to such property only as is actually employed in the exercise of municipal functions. If this conclusion were doubtful it would nevertheless be required by the established rule that all exemptions from taxation are to be strictly construed.

It must be admitted that there is considerable conflict among the authorities as to what is a governmental and what is a proprietary function. However, in the final analysis we must find the answer to our problem in the Ohio Constitution, as construed by the decisions of this court.

From what has been said in various decisions of this court we conclude that in the ownership and operation of a transit system a municipality is engaged in a private or proprietary function. If the general rule were applied that would make an end to this phase of the case, but in Ohio that general rule has not been always followed.

In the decisions of this court there has been no deviation from the conclusion that a municipality in the operation of a public utility is engaged in a proprietary and not a governmental function, yet light and power plants, *water works* and airports, when municipally owned and operated, have been held exempt from taxation. Therein lies the conflict between the general rule and the Ohio cases.

Judge Bell stated that, if this were a case of first impression, he would hold that the General Assembly is without power to exempt any public property (real property) from taxation unless such property is used exclusively for a governmental purpose; and that the ownership or operation of any public utility operated to preserve the peace or *for the protection of the person or property of the citizens* is the exercise of a governmental function and such property *could be exempted*

from taxation, while the ownership or operation by a municipality of a utility which relates only to the development of the municipality itself constitutes the exercise of a private or proprietary function and such property could not be exempt from taxation. Such holding would conform to the generally accepted rule.

There can be little doubt that where a municipality owns or operates such a system for the convenience of the public it is engaged in a private competitive business for profit, and, while such property is publicly owned, it is not used exclusively for a public purpose.

Public property used exclusively for any public purpose is exempt from taxation for two reasons: (1) it is purchased and maintained by public money derived from taxation and to tax such property would amount only to taking public money from one pocket and putting it into another, and (2) the product of the expenditure of tax money should not be made the subject of another tax.

The property here in question was not purchased with public money. The city is in no way liable for the payment of the mortgage revenue bonds or for the maintenance of the property. If the operation of the transit system should prove to be a losing venture the only recourse of the bondholders would be to sell the property and stand any resultant loss.

The great weight of authority is to the effect that where the state (or one of its political subdivisions) enters the field of *private competitive business for profit* it divests itself of its sovereignty pro tanto, takes on the character of a private corporation, and thereby forfeits its immunity from taxation.

It is a matter of common knowledge that the city has collected sufficient revenue from the operation of the transit system, over and above operating expenses, to pay off almost half of the purchase price. We think that is cogent evidence that the city has entered the field of private competitive business *for profit.*

There is another test, which is often applied in order to determine whether publicly-owned or -operated property is being used in connection with a governmental or a proprietary function.

It is a settled rule of law that a municipality is not liable for negligence of its agents or servants while engaged in a governmental function but is liable if engaged in a proprietary function.

By all the applicable tests it must be concluded that the city entered the field of private competitive business *for profit;* that under such a state of facts, the General Assembly could not and therefore did not authorize tax exemption of the real property used in such enterprise.

The Board of Tax Appeals held that its decision was authorized by the case of *City of Toledo* v. *Jenkins et al., Board of Tax Appeals.* An examination fails to disclose any language which would warrant the conclusion that where a municipality enters the *field of private competitive business for profit,* the real property used in conducting such enterprise is exempt from taxation under *any* provision of the General Code. The distinction between the Toledo case and the instant case is that in the Toledo case the enterprise was not being conducted primarily for profit, while here the *primary* and *principal object* of the enterprise *is profit.*

The General Assembly is limited to grant tax immunity to personal property only by Article I of the Constitu-

tion. Do Secs. 5351 or 5356, General Code, grant such immunity to the personal property here in question? Sec. 5351, General Code, reads as follows:

. . . and public property used for a public purpose shall be exempt from taxation.

It should be brought to mind that exemptions from taxation are not favored by the law. He who claims tax exemption of property, real or personal, must show clear and indisputable authority for such exemption.

In this state the rule is applied without respect to the identity of the claimant.

The language of Sec. 5351, General Code, is general and can be applied to any property whether real or personal. However, that section was passed pursuant to Sec. 2, Article XII, of the Constitution, and is no broader than the constitutional provision upon which it is bottomed. *As applied to personal property it is provided that it must be public property used for a public purpose.* The public ownership and the public use must co-exist. Whether it is used for a public purpose is quite another matter. What has been said as to the use of the real property applies with equal force to the personal property used in connection with the operation of the transit system.

Sec. 5356, General Code, reads as follows:

Market houses, public squares or other public grounds of a city, village or township, houses or halls used exclusively for public purposes or erected by taxation for such purposes, notwithstanding that parts thereof may be lawfully leased, and property belonging to park districts, created pursuant to the provisions of Sec. 2976-1 et seq., of the General Code, shall be exempt from taxation.

We are at a loss to understand the claim that this section grants tax exemption to a municipally-owned transit system.

We conclude and hold (1) that under the Constitution the General Assembly could not and therefore did not pass any general law to exempt from taxation the real estate used in connection with the operation of this transit system, and (2) that, while under the Constitution the General Assembly could, it did not exempt from taxation the personal property so used.

Dissenting Opinion

The dissenting opinion of Judge Zimmerman sets forth the following:

Sec. 4, Article XVIII of the Constitution of Ohio confers upon municipalities the right to "acquire . . . and operate . . . any public utility the product or service of which is or is to be supplied to the municipality or its inhabitants."

Sec. 2, Article XII of the Constitution recites in part that "general laws may be passed to exempt (from taxation) . . . public property used exclusively for any public purpose. . . ."

Pursuant to such express authorization, the General Assembly enacted Sec. 5351, General Code, declaring, inter alia, that "public property used for a public purpose shall be exempt from taxation."

The precise question to be resolved is whether property of the transit system of the city of Cleveland is "public property used exclusively for any public purpose."

There can be no doubt that property of a utility owned and operated by a municipality is public property (*City of Toledo* v. *Jenkins et al., Board of Tax Appeals*) and, under the holdings of this court in the case just cited and

in the cases of *State, ex rel.,* v. *City of Toledo,* and *City of Toledo* v. *Hosler, Treas.,* such transit system, devoted to the transportation of the citizens of Cleveland generally, is used exclusively for a public purpose.

The syllabus in the Hosler case, supra, is peculiarly applicable and reads:

Gas wells, pipelines, pumping stations and machinery owned by a municipal corporation and used by it for the conveyance of gas to be consumed by it and by its citizens generally, are used exclusively for a public purpose and are exempt from taxation.

In 51 American Jurisprudence, 554, Sec. 563, the following statement appears:

While a number of courts have taken the view that public utilities operated by a municipal corporation for compensation . . . are taxable, upon the theory that the implied exemption of publicly-owned property extends only to property used for governmental, and not merely for public, purposes, the majority rule is that property owned by a municipal corporation is exempt if it is devoted to public purposes, whether these purposes are governmental or primarily for the benefit of its own citizens and, accordingly, that municipally-owned power and light plants, and water works, gas works, transit systems, and other public utilities distributing commodities and services to the public for compensation, which are for a public, although not for a governmental, use are included within the meaning of statutes exempting the property of municipal subdivisions.

We submit that the quoted constitutional and statutory provisions relating to the exemption from taxation of public property publicly used, coupled with the cases cited, place Ohio on the side of the majority rule as outlined in the above excerpt from American Jurisprudence. The term "public purpose" as contained in our constitutional and statutory provisions is not restricted to purely governmental enterprises, but embraces a wider field of public activity, including proprietary undertakings. Where there is public ownership and public use of a utility, as in this case, the property of such utility is exempt from taxation under our laws.

We take the position that the Constitution is a vehicle of life, intended to meet and to be applied to new conditions and circumstances as they may arise and which come fairly within the purview of the language used. 8 Ohio Jurisprudence, 128, Section 26.

While only incidentally part of the decision, the following from Page's Annotated Ohio General Code is of interest to those concerned with the management of Ohio municipal water supplies.

Sec. 5357. (Water works and pipelines.)

Works, machinery, pipelines and fixtures belonging to a city or village and used exclusively for conveying water to it, or for heating or lighting it, shall be exempt from taxation. (R.S. Sec. 2732.)

See notes to G.C. 5349.

In *State, ex rel.,* v. *Toledo* (48 O.S. 112, 26 N.E. 1061, 11 L.R.A. 729), the supplying of natural gas to a municipal corporation and its citizens was held to be a public use for which the taxing power might be exercised.

Gas wells, pipelines, pumping stations and machinery owned by a municipal corporation and used by it for the conveyance of gas to be consumed by it and by its citizens generally, are used exclusively for a public purpose and are exempt from taxation: *Toledo* v. *Hosler* (54 O.S. 418) reversing *Toledo* v. *Hosler* (10 O.C.C. 257, 6 O.C.D. 590); see, to the same effect, *Toledo* v. *Yeager* (8 O.C.C. 318, 6 O.C.D. 273).

Water Works Industry's Attitude on Grounding and Stray Current Problems

By Charles F. Meyerherm

A.W.W.A. Representative on Article 250 Com., National Electrical Code

A contribution to the Journal

EVER since protective grounding of electrical systems on water pipes was advocated as a safety measure the American Water Works Association has attempted to co-operate with those supporting the practice, so long as damage to water pipes or water quality did not occur. The Association's initial sanction of water pipe grounding in 1920 was predicated on the assurance that the grounding connections installed for protective purposes would transmit stray currents to the water pipes only during the comparatively short and infrequent periods when these connections were fulfilling their protective functions. Ever since it became evident that this assumption was incorrect, and that with a multi-grounded electrical distribution system most of the grounding connections can and usually do transmit appreciable stray current to the water pipes more or less continuously during normal operating conditions, there has been a tendency among certain electrical interests to assert the propriety of increasing the stray currents on the water pipes, not in the interest of increased safety, but primarily to cheapen electrical installation costs and to simplify certain problems arising from the use of electric current or from the equipment and devices conventionally installed or advocated for approval and use in the electric utility field. This tendency conflicts sharply with the water works industry's opinion that:

1. The National Electrical Code is primarily a safety code for life and property.

2. It is not a specification of calculated risks which insurance interests can profitably take.

3. The use of insulated conductors on the load side of service entrance equipment has not imposed any noticeable restriction on the use of electricity, nor on the development of the electric industry in this country.

At each revision of the National Electrical Code, in one Article Committee and then in another, attempts have been made to extend the use of bare neutral wiring or to destroy the effectiveness of the insulation on the grounded circuit conductor on the load side of the electric service equipment by connecting the frames of ranges, water heaters and other equipment to this conductor. Water works specialists see only increased hazard, not increased safety, in these proposed changes, and in their opinion the possible saving in electrical installation cost is insignificant compared to the hazards and complications introduced. They therefore feel that there must be some other explanation for the vigor, zeal and persistence with which the

advocates of these proposals carry on year after year. They suspect that the ultimate goal of this activity is a one-wire wiring system with the conductivity of water and gas pipes and other building metal work appropriated for electrical purposes, without regard to the responsibilities, hazards, complications and possible deleterious effects which such use of the pipes may entail.

From 1920, when water pipe grounds were first sanctioned, until about 1928, water works men did not know what rules governed this practice until the various editions of the Code were issued in final printed form. From 1928 to date, the water works industry has had only a special membership in the grounding subcommittee and in the Special Committee on Bare Neutral which was terminated years ago, but has had no representation on any other Article Committee and no vote in the Electrical Committee.

The A.W.W.A. on several occasions has called the attention of the Electrical Committee, as well as the National Fire Protection Association, to the impropriety of that committee's preparation of standards of electrical wiring which involved the use of the water pipe system for grounding and, incidentally, current-carrying purposes without the knowledge and consent of the owners of those pipes or of the water purveyors, who are charged with the responsibility of furnishing a continuous and safe supply of potable water through those pipes.

The A.W.W.A. has requested representation on the Electrical Committee and this request has been denied. The Association has not deemed it necessary to argue the matter, because the reasonableness of the request and the unreasonableness of its rejection are self-evident. It is not surprising, therefore, that the water works industry views with suspicion the continued effort to write into the Code practices and policies which appropriate non-electrical structures for electrical purposes without the knowledge and consent of the owners and users of such structures.

Realizing what happened after the protective grounding of lighting transformers on water pipes was sanctioned, water works operators fear the implications and complications which may be involved in some of the proposed changes to the National Electrical Code, and they resent the necessity of having to defend continuously their objections to proposals which admittedly mean increased stray currents on water pipes. They maintain that until it can be proven to the satisfaction of the water works operators that such stray currents cannot possibly cause hazard or harmful effects to the water pipe system or to the water carried therein they should not be expected even to consider proposals which increase stray currents on water pipes.

The position of the A.W.W.A. with regard to electric grounding was correctly recorded by the members of the Board of Directors, after their annual meeting in New York in January 1944, and published in the March 1944 JOURNAL. The position thus recorded has not changed.

The foregoing address was presented at the Eastern Section of the International Association of Electrical Inspectors on Oct. 22, 1945, in New York City.

Maintenance Problems

By A. A. Ulrich

Vice-Pres. & Mgr., Massillon Div., Ohio Water Service Co., Massillon, Ohio

Presented on Oct. 26, 1945, at the Ohio Section Regional Meeting, Massillon, Ohio

THIS paper deals with a number of maintenance problems which those who are charged with the responsibility of operating a water plant have had to correct at one time or another. These are actual maintenance problems encountered at Massillon, Ohio, and it is hoped that the suggestions here will benefit operators with similar problems elsewhere.

Rehabilitation of Gravel Well

The water supply for Massillon is taken from twelve 6-in. rock wells and two gravel wells. Like most water departments, Massillon has been operating at near peak capacity during the past several years. The department has never had to restrict the use of water but it was found necessary, in order to meet the increased demand, to rehabilitate one of the gravel wells drilled in 1919. The capacity of this well had dropped from 3 to 1.4 mgd. Drawdown records showed that the trouble was not in the ground water supply but was due to a clogged screen, to corrosive elements or to silt and sand packing around the screen, thereby retarding the flow to and through the well screen. In the past, this well had been treated with acid on three occasions and once with dry ice, but without any real success. It was decided to replace the 24-year-old 12-in. screen with a new one. The work was planned for the winter, the season of low demand. Construction was begun in December 1942 by inserting an 8-in. pipe into the well and sanding this into the 12-in. screen. The 8-in. pipe was then pulled, removing the old 12-in. screen with it. The pipe was extended to the bottom of the well, at a depth of 153 ft., and the bottom 10 ft. were sanded tight. The sanding was accomplished by wrapping burlap sacks around the bottom of the first section of pipe to fill the space between the pipe and the screen. After the pipe had been lowered to the bottom of the well, gravel was poured into the space between the pipe and screen for a depth of 2 ft. and sand was poured on the gravel to a depth of 8 ft. The sand and gravel formed a tight wedge between the pipe and screen which became more secure as the pipe and screen were pulled from the well.

As the old screen was slowly pulled out, the hole filled up with sand and gravel. The new screen, which consisted of 12-in. pipe with the bottom 85 ft. perforated with $\frac{3}{8}$-in. holes on $1\frac{1}{2}$-in. centers, was then started back down by bailing sand and gravel from the inside. When the pipe had reached a depth of 99 ft., it was necessary to start driving it. After it had been driven for about 5 ft. the sand and clay were bailed out.

After the new screen had been driven to the concrete plug at the bottom of the original well the pump was in-

stalled. The well capacity had been increased to 2.1 mgd. from the 1.4 mgd. delivered before these changes were made. After two years of operation this well is still producing 2.1 mgd. and it is expected that the new screen and casing will last another twenty years.

Softening and Purification Problems

A source of a great deal of trouble at Massillon was the constant replacement of the perforated piping in the bottom of the carbonating basin through which the carbon dioxide gas is discharged. It was never possible to carry a uniform distribution of the gas throughout the chamber for any length of time because of the lack of a durable metal or material. The perforations through which the gas was discharged became enlarged as a result of an acid condition caused by the moisture and the temperature of the gas. Galvanized and black iron pipe would last about two weeks before the $\frac{1}{4}$-in. holes would become enlarged and all the gas came up at one spot in the basin. Copper tubing, red brass and even bakelite were used before a suitable material was found.

The solution to the problem was a specially prepared glazed tile, with the $\frac{1}{4}$-in. holes drilled to specifications before the tile was glazed. These were installed in November 1943 and are still in service.

The success of the tile was due, in part, to the correction of another maintenance problem about the same time. The carbon dioxide gas used in the carbonating basins is manufactured in coke-burning hot-water boilers. During the summer a small hot-water heater is used and the water from the heater is used to slack the pebble lime. In the winter gas is taken from the hot-water boiler which heats the plant. This gas was being taken from the fire box direct to a small chamber, which consisted of two 6-ft. lengths of 8-in. cast-iron pipe and a brick box about 4 ft. square. The purpose of the pipe and box was to cool the gas and to drop out any suspended matter. Very little cooling and settling occurred. The gas was then discharged direct to the basins by Roots-Connersville blowers. These blowers were overhauled about every two years because of hot and dirty gas. The gas going to the basins was also very hot.

In order to correct this condition, a large cooling chamber, about 15 ft. long, 3 ft. wide and 5 ft. high, was constructed of cement block. In this chamber are baffle walls and, at the discharge end, the gas must pass through a filter of limestone before passing to the blowers. The inside is covered with a thin layer of cement and several coats of acid-resistant paint. The gas, after passing through this chamber and filter, is cool, clean and dry. The construction of this cooling chamber and filter has reduced the maintenance on the blower equipment and undoubtedly to some extent accounts for the long service which the glazed tile is giving in the carbonating basins.

Filters

Filters are a maintenance problem to most purification and softening plant operations. The Massillon plant has been in operation for fourteen years and the rapid sand filters were ten years old before they were completely rebuilt by replacing all the fine sand, torpedo sand and the first four grades of gravel. As the sand grows from the calcium carbonate deposit it is removed so that it will not discharge into

the wash water troughs. New sand is added occasionally. Trouble has been experienced with the calcium carbonate deposit which builds up in the influent pipe from the carbonating basins to the filters. This is a 20-in. pipe leading to the filters, out of which a 10-in. pipe leads into each of the four filters. The cleaning of the 10-in. pipes was accomplished by cutting the pipe and dropping out the section from the 20-in. header to the filter wall. The section was replaced by the use of a Skinner coupling and is no longer difficult to clean. The large 20-in. pipe, however, is still a problem to clean. This condition can be corrected by replacing the 20-in. pipe with an open flume to the filters.

Pumps

During an electrical storm on July 8, 1943, lightning struck the Massillon plant and burned off the lead wires and several windings on the stator coil of the 150-hp. synchronous motor for the 2.5-mgd. high-pressure pump. These were quickly repaired and the motor was placed back in service. On July 15, however, the motor started to smoke and then stopped completely. A quick examination revealed that at least one and possibly all of the rotor coils were burned out. This trouble was considered serious because of the time required to rewind the coils. The other high-pressure unit has a capacity of 1.5 mgd. and could not meet the demand. While every electric dealer in northeastern Ohio was being called, the auxiliary supply was placed in operation. This consists of a 30-in. gravel well in which is installed a 2-mgd. Peerless turbine deep well high-pressure pump. This unit, although in first-class condition, had not been used for some time and the coupling belt broke upon starting. Rope and bailing wire were used until a new belt was obtained. In the meantime, a repair shop in Cleveland agreed to repair the motor and it was immediately loaded on a truck and taken there. A rented induction motor was used while the repairs were being made. The motor was returned on July 30, but many anxious hours were passed while the rented motor was being used.

Pump failures are rare and their perfect operation is more or less taken for granted. The pump manufacturer deserves credit for producing a machine that has developed an efficiency that, for dependability and smoothness of operation, is comparable to the human body. The operator who tends the pump year after year gets to know its every whim. Hour after hour he hears its hum and, should the tone change, he knows it at once and looks to see what is wrong. This accounts for the unfailing good maintenance that seems to be given pumping equipment. When a pump is kept in continuous operation for twenty years or more it is obvious that it has been given good care.

Details of good maintenance vary in different plants, but they all involve routine inspections of different items, some several times a day, some once a day, and some every few months. But generally a good job is done on maintaining pumps.

Valves, Hydrants and Appurtenances

In the distribution system, because of the large amount of pipe, fire hydrants, valves, service lines and other appurtenances, are found the greatest number of maintenance problems. A thorough knowledge of the distribution system, especially valve locations, will make maintenance work much easier,

especially at night or during the winter when the ground may have a covering of snow. At Massillon each of the service trucks is equipped with a valve location book. In this book, each street is shown in alphabetical order at the top of a page, under which are listed all the valves on that street, showing the measurements in relation to all curb lines. If a main leak is reported, the section can be shut down immediately, without the necessity of locating valves which may be covered if the street is unimproved or covered with snow. Repairs to main leaks no longer require long shut-downs, as in the old days, when lead pots, salamanders and heavy cast-iron fittings had to be hauled out and installed under severe weather conditions. Now these repairs are made with repair clamps, bell joint clamps and other fittings which do not require poured joints and calking, and which are installed in one-fourth the time.

Fire hydrants, on which there are watch valves, eliminate lengthy shut-downs for repair when they are broken or leaking. Many hydrants are broken by traffic and, unless the barrel is completely shattered, it can be welded and re-used. It is good practice to carry a few repaired barrels in stock. A thorough and complete inspection of all hydrants, throughout the winter, is not only a safeguard in assuring perfect operation, but avoids many difficult maintenance problems.

The opening and closing of valves should be known and noted in a valve book or valve record. Care should be exercised where it is necessary to apply force.

When a main break occurs and there is danger of damage from flooding, the superintendent must be sure that all closures are completed. It is essential that all appurtenances of the system be known and kept in good working order to meet any emergency.

The proper installation of service lines to a depth that will avoid any danger of freezing is the surest way of reducing service maintenance. The depth of the main and the conditions and kind of soil also govern the precautions that should be taken to prevent freezing. Whenever possible the installation of service lines in or near sewer trenches should be avoided. Also, curb boxes should not be installed in or near driveways where they might be broken off or forced down to shear off the service line when traffic passes over the box.

Much labor and time can be saved in turning services off and on, if the curb rod is used instead of the T socket head on curb stops. The curb rod, which is $\frac{1}{2}$-in. square iron for $\frac{3}{4}$-in. curb stops and $\frac{3}{4}$-in. square iron for 1-in. curb stops, is about 36 in. long and fits down into the socket head of the curb stop. When the rod extends up 36 in., any dirt which falls into the box will not prevent or delay the operation of the curb stop.

Meters

Meter maintenance is one of the most important departments of the water supply business, and it is surprising to discover that, in far too many water works plants, very little attention is paid to the meter, once it has been bought and installed. In some localities, meters are allowed to remain in service until such time as they fail to register. In many cases, the manager or superintendent has little, if any, knowledge of the operating mechanisms or the characteristics of the instruments on which they depend for revenue.

Periodic testing of meters is practiced in many plants, the frequency of testing depending on the type and kind of water the plant is supplying. A five-year plan is followed at Massillon. The meters are removed, tested and disassembled. The casings are given an acid bath and cleaned on buffer. Worn parts are repaired or replaced where necessary. After the repairs have been made the meter is tested, the register is set back to zero and the meter prepared for resetting.

All meters are removed as soon as the meter reader reports leakage, stoppage or damage by freezing or other means. Meters are removed from vacated houses if a new tenant does not immediately sign up for service. These meters are sent through the same routine of repair and testing as outlined above.

Since meters are read monthly at Massillon it is possible to keep a continuous check on the meters, and all broken glasses, dirty dials and missing lids are immediately reported, as are leaking stuffing boxes and noisy meters.

All meters, 2 in. and smaller, are removed from service for test or repair, and those over 2 in. are tested in service by comparison with a test meter. Meters 2 in. and larger are tested once a year.

The task of maintaining a water works system requires constant diligence and foresight, which in turn provides smooth operation, unfailing service, pure and safe water at a minimum cost.

ERRATUM

The Journal regrets that in the publication of "Transformations of Iron by Bacteria in Water," by Robert L. Starkey, which appeared in the October 1945 issue (37: 963–984), mention of its source was omitted. "Transformation of Iron by Bacteria in Water" was originally presented at the Inservice Training Course for Water Works Personnel, conducted by the School of Public Health of the University of Michigan, Ann Arbor, on May 22–24, 1945.

Coagulation and Benefits From Good Floc Formation

By R. W. Ockershausen

General Chemical Co., New York, N.Y.

Presented on Nov. 9, 1944, at the Four States Section Meeting, Philadelphia, Pa.

THIS discussion is directed toward the practical problems involved in the use of coagulants. No attempt will be made to discuss coagulation from a technical standpoint.

Reduced to simplest terms, rapid sand filtration involving the coagulation of water is first a chemical, then a mechanical, process. By chemical means a large part of the objectionable matter is drawn into a more easily removable form, and then, by mechanical means, these particles containing the objectionable matter are built up into large particles that will settle readily. The few that do not settle are rejected from the water by the filters. Nearly all of the "trick" of the process is involved in the coagulation of the raw water. Mistakes made at this point cannot be easily corrected later and, on the other hand, conscientious and intelligent care will largely insure a superior finished water, with a consequent reduction in the over-all operating and maintenance costs of the filters.

Difference Between Precipitation and Coagulation

In discussing water coagulation one might ask: What is the difference between precipitation and coagulation, and what is a good floc? The term precipitation is loosely used by many to denote coagulation. There are water plants obtaining precipitation but not good coagulation or floc formation. To illustrate the difference, for example, a moderate dose of lime, when fed without coagulant to a calcium bicarbonate water, will produce precipitation, but one would hardly call the granular, sometimes very fine, precipitate of calcium carbonate a good floc. Likewise with coagulants, a plant may obtain precipitation instead of floc formation, and lose many of the benefits that should be derived from the treatment. Coagulation goes further than precipitation. A good floc is a hydroxide particle that may be as large as $\frac{3}{8}$ in. Some plants obtain larger flocs, many smaller. The floc particle starts as a fine precipitate in the water, which, during the process of agitation, comes in frequent contact with and adsorbs nearly all of the objectionable suspended material, color and bacteria in the liquid. This particle, with its occluded foreign material, finally grows to a large size, and in this form settles readily under the quiescent conditions that should prevail in the settling basins. In this way the objectionable material that has been mechanically incorporated in the floc is mechanically removed with the floc in the settling basins. The difference between precipitation and coagulation is pointed out, because anything short of the lat-

ter usually finds the plant lacking in the ability to remove effectively turbidity, color, bacteria and even taste and odor.

Turbidity Removal

It is hardly necessary to elaborate on turbidity removal by coagulation, because this is one of the fundamentals that made possible the rapid sand filter. Muddy river supplies, unusable even after sedimentation, are turned into sparkling clear waters by coagulation. One thinks of sand filters having filter media with an effective size of 0.40–0.50 mm., and rated to produce about 2 gpm. per sq.ft. Careful preparation of the water, and by this is meant thorough coagulation and sedimentation, is changing this view and making possible the use of filters with coarser sand (0.7 mm. effective size), capable of producing as much as 4 gpm. per sq.ft. This serves to show the importance of forming a well-defined floc, one that sweeps out turbidity and settles rapidly. The trend is definitely toward high coagulation efficiency as a means of filtering at higher rates. Economies in the size of filter structures, ease and flexibility of filter operation and savings in wash water, in addition to the higher quality product delivered to the customer, are the results.

The settling basins can do their full share of the work only when a well coagulated water is introduced to them. Unless this is accomplished the filters may suffer from mud balls, a pulling away from the side walls, heaving, rapid loss in head, low filter runs, high wash water requirements, lower quality effluent and other ills. The design of many existing plants may preclude high-rate operation, but whether the plant is new or old, whether it operates at a high or low rate, it still holds that maximum filtration efficiency will be obtained in the average plant only when floc formation is at its best.

Marginal Coagulant Doses

The very small coagulant dose used in one plant was once referred to as a "homeopathic alum dose." The dose of about 3.4 ppm. was a marginal one, barely capable of producing a precipitate, much less a well-defined floc. This was a well-supervised plant, however, and it had the advantage of a raw water of constant good quality; mixing was very thorough, and, unlike the average plant, it had an extremely long settling period. Excellent results were obtained in this plant, but such borderline treatment would be dangerous in the vast majority of filter plants where conditions are seldom as perfect as this.

Not far distant from the above plant is a large water works treating a flashy river water. This plant also has a long settling period, sometimes longer than three days. Unlike the former plant, however, this plant's raw water varies in quality and has a turbidity of 1,000 ppm. or higher. Long experience has proved the value of providing a safety factor above the minimum dose of coagulant that will produce floc. Filter troubles are uncommon at this plant, and it is the practice to wash filters after 300 hours, "whether they need it or not." The important requirement for the average operator, whose plant seldom has ideal conditions, and whose diverse duties prevent frequent checking of floc formation, is to feed sufficient coagulant with a margin of safety so as to absorb shocks or slight changes in the coagulant demand of the water. This practice has paid dividends and returned

benefits in the average plant under average conditions.

Reduction of Microscopic Organisms

At various times during the year filter runs may become seriously shortened for reasons not always apparent. A microscopical examination of the raw water will frequently show the presence of large numbers of filter-clogging organisms. A classic example of this was experienced several years ago by C. J. Lauter, Chief Chemical Engineer in the Washington, D.C., water purification plants. Floc formation was good at this plant but filter runs still dropped off seriously. Copper sulfate and higher doses of chlorine were used but the condition showed no improvement. Even though the organisms were killed, their bodies still carried over to the filters, causing them to clog. Lauter found that by raising the alum dose it was possible to entangle the live and dead organisms in the floc and carry them down in the settling basins. The Washington experience was extreme, and during less serious sieges of such organisms a well-formed floc will do much toward leveling off filter performance. Many operators are aware of this and by watching water temperatures and the season of the year can anticipate, to a certain extent, when the sieges are likely to occur.

Taste and Odor Reduction

Very little literature has been published concerning the reduction of tastes and odors by coagulation, and yet most of us know that when we clean up a water by such treatment it is rendered more palatable. What has been said and published may be summed up briefly in the following sentences. Coagulation may remove up to 60 per cent of the threshold odor of water, depending on the type of odor-producing substance present. Organic and other colloidal matter that produces tastes and odors can be almost completely eliminated by floc-forming chemicals. Where the odor is from trade wastes or from soluble oils, the products of microscopic organism decomposition, coagulation is less effective.

W. R. Gelston, Superintendent of Water Works, Quincy, Ill., has done some interesting work on taste and odor reduction with aluminum sulfate. To borrow a commonly used prefix of today, it might be said that he practiced "super-coagulation" during the course of his test. Normally a dose of 17 to 34 ppm. of aluminum sulfate is used in this plant. During troublesome taste and odor conditions it was found that by increasing the coagulant dose the odor was considerably reduced. A large dose of carbon had been required at this particular time. The difference between the cost of aluminum sulfate and carbon was great enough to give the coagulant an advantage in this instance. Not unmindful of certain disadvantages to high coagulant doses, "super-coagulation" should be further experimented with by operators equipped to do this kind of work. There is too little known about it now to suggest its general adoption without further experimental proof of its value.

Normally, coagulation is considered an aid to taste and odor removal by the highly effective methods employing activated carbon or high-rate chlorination; seldom has it been able to take their places. The point here is that a well-formed floc has a fairly large surface area, capable of adsorbing certain foreign materials that produce taste and odors. The operator should take ad-

vantage of this to the degree his experience justifies.

Other Benefits

It has been well established that from 60 to 85 per cent of the bacteria in the average water are removed by coagulation and sedimentation. Regarding bacteria removal, Charles Cox has written: "Special attention must be given to the supervision of the treatment of waters fluctuating in quality. . . . This is especially true of the need for adjusting the dose of coagulants and chlorine to compensate for rapid changes in quality of the raw water." A number of operators who have been able to improve floc formation in their plants have reported reductions in the chlorine dose. Chlorine gives more effective kill of bacteria when some of the organic and chlorine-demanding colloids are removed by coagulation.

Regarding color removal, unless more than a "lazy" floc is developed the treatment will be ineffective. With a well-formed floc color can be reduced to 10 ppm. or lower, even with a raw water having the appearance of tea.

Determining Dose for Good Floc Production

Numerous advantages of good floc formation have been pointed out but a discussion of this sort would be incomplete without some reference as to how to obtain a good floc.

A chemical analysis of a water is not enough to tell how effectively it can be coagulated and what quantity of chemical is necessary. The physical characteristics of the water, as well as the chemical properties, have a bearing on the coagulant requirements. There is only one real way to determine the dose and that is by means of the simple jar test. There is no substitute for this test. A stirring machine for making the floc tests is not absolutely necessary but very desirable, for, depending on the number of water samples that can be stirred in the machine, that many different doses can be tried at one time. In the absence of a well-equipped laboratory with a 3-, 4- or 6-place stirrer, several 1- or 2-qt. fruit jars can be used to good advantage and the samples can be stirred by hand.

Factors in the Jar Test

It is preferable to use 2-qt. samples for the floc tests although 1-qt. samples are adequate. There are several other points of importance. Once the jars are filled and in position, the stirring machine should be started before the aluminum sulfate solution is added. Many operators have found that, if there is even a short lag between the addition of the chemical and the starting of the stirrer, the floc does not develop as effectively as when the chemical is added to an actively agitated sample. This follows plant procedure, where the coagulant is always added to the water while it is in motion. Not only should the dosing of "still" samples be avoided, but the mixing of the sample should be done with care. A rapid initial mix of one or more minutes, as experience dictates, is highly desirable for quick dispersion of the alum in the water. Dilute chemical solutions aid in obtaining immediate dispersion and enable accurate dosing. The rapid initial mix should be followed by 10 to 30 minutes of slow agitation just sufficient to keep the floc particles in suspension and permit them to grow in size. If desirable, this slow mixing period may be timed to conform with the mixing in the plant.

By means of the jar test the proper dose of coagulant can be determined.

The test will quickly indicate whether alkali or acid addition for pH and alkalinity adjustment are necessary for effective floc formation. The results will show how much, if any, of these agents are required. The floc test will show the dose of chemical needed for the removal of practically all of the color and at the same time indicate the minimum dose that could be used if a certain amount of color in the finished water can be tolerated. Experiments with nearly every chemical means of improving floc formation can be made before trying them on the plant. For these reasons the procedure should be standard practice in every water filtration plant where coagulation of raw water for turbidity, bacteria and color removal is necessary.

Conclusions

Norcom and Brown have formulated one of the best conclusions that could be drawn on adequate floc formation. They state: ". . . that coagulation process is the heart of the rapid sand process. Failure to give constant attention results in a poor product, filter deterioration, waste of chemicals and thoroughly unsatisfactory conditions."

Coagulation goes further than precipitation. When a well-defined floc is developed in the water it will effectively remove turbidity, color and bacteria and will aid in the reduction of tastes and odors. Operation and effluent quality will be improved. The simple jar test is the best method for determining the proper treatment to be given the water. This test will insure against underdosing or overdosing. There is no justification for overdosing and wasting of chemicals, but there is a strong case for sensibly controlled coagulation.

The Removal of DDT From Water Supplies

By John A. Carollo

Constr. Engr., Ferguson, Carollo & Classen, Phoenix, Ariz.
Formerly Capt., Sn.C., Fourth Service Command Medical Lab., Ft. McPherson, Ga.

A contribution to the Journal

THE anticipated widespread use of DDT [(2,2-bis(p-chlorophenyl) 1, 1,1-trichloroethane)] by the Armed Services for the control of disease-bearing or pest insects presented many problems to the Preventive Medicine Branch of the Medical Department of the Army. Early in the program one of the questions regarding the use of DDT as a mosquito larvicide was, "What effect would DDT have upon the water supply of troops?" In advanced areas, especially, gross over-treatment was likely to occur. The Army also wanted to know if water so treated could be made safe by the current field methods of water treatment, and, if not, what methods would have to be developed. The men responsible for civilian water supplies in the continental United States would also be interested because many watersheds used for domestic water supplies will be treated with DDT for mosquito control. These problems, among others, were studied at the Fourth Service Command Medical Laboratory during 1944 and 1945.

Problems Concerning Water Works

The problems of concern to the water works profession are as follows:

(1) What concentration of DDT in a water supply may safely be permitted?

(2) What effect do "natural" purification agencies—storage, sunlight, sedimentation, etc.—have upon the toxicity of DDT?

(3) How effective are the commonly used methods of water treatment in the removal of DDT from water?

Before these questions could be adequately answered, it was necessary to be able to determine the amount of DDT in water. During the early stages of our work a chemical method for determining DDT in water was not available but earlier work on the effect of various natural waters on DDT had provided a limited biological assay method. Minute amounts of DDT could be detected because we had determined that from 0.001 to 0.0015 ppm. of DDT in water would kill from 70 to 100 per cent of the larvae of *Aedes aegypti* mosquitoes and that 0.03 ppm. would kill 100 per cent of *Anopheles quadrimaculatus* larvae in 48 hours. The *A. aegypti,* especially, proved extremely reliable test animals.

During May 1945, the Xanthydrol-KOH-Pyridine method for the determination of DDT in water had been tested sufficiently for us to know its limitations. It made possible the chemical determination of concentrations of DDT in water as low as 0.05 ppm. Because the final color developed in the test sometimes disappears before the optical density can be determined on a spectrophotometer, duplicate samples must be run. A standard of DDT

with each batch of samples is run to overcome variations in the reagent solution and a correction is made to the individual test results.

The Bent's method (nitration and addition of alcoholic KOH) eliminates the difficulties caused by moisture and color disappearance in the Xanthydrol-KOH-Pyridine method. Complete recovery of DDT from water has not yet been possible. The extraction of DDT from water with chloroform is somewhat less complete, but more uniform than with ether.

Toxicity of DDT in Drinking Water to Mice

Many experiments on the toxic effect of DDT upon warm-blooded animals had been performed, but, to our knowledge, none of these included tests in which the test animals' water contained DDT. Therefore, the following experiments were conducted:

Test A: Ten mice were furnished water containing 10 ppm. of DDT and triton and 30 ppm. of xylene as their only source of water for 75 days. For controls, ten mice were given water containing triton and xylene, but no DDT, and ten mice were given tap water.

Test B: Ten mice were furnished water containing 50 ppm. of DDT and triton and 150 ppm. of xylene as their only source of water for 58 days. The controls were similar to those of Test A.

The DDT solutions were freshly made up every second day throughout the test period. The mice were observed daily during the test and for 30 days thereafter. Two females gave birth to healthy litters during the latter part of the test period. No ill effects were observed in either batch receiving DDT or in the control groups during the entire period.

"Natural" Purification

Storage

Earlier in the work at the Fourth Service Command Laboratory it was noticed that DDT in water gradually lost its ability to kill mosquito larvae. The following tabulation shows the number of hours' storage required for various concentrations of DDT to lose their ability to kill *A. aegypti:*

DDT, ppm.	*Storage Time, hr.*
0.0015	48
0.003	96
0.01	120
0.04	288
0.1	312 +

Sedimentation cannot be the explanation of this phenomenon because DDT is soluble in water, at least to 0.0015 ppm., and this concentration is sufficient to kill *A. aegypti* in 48 hours. Direct sunlight is not necessary for the process because such tests have been run indoors in semidarkness.

Turbidity

The fact that highly turbid waters do not interfere with the 48-hour kill of mosquito larvae by DDT has been demonstrated with a number of waters, including water from a stream receiving the effluent from a plain sedimentation sewage plant, as shown in Table 1.

An indication that DDT is partly removed from water by the sedimentation of clay suspensions is shown by the reduction in the 48-hour kill of *A. quadrimaculatus* larvae when water containing 0.1 ppm. DDT and clay is coagulated and filtered before larvae are placed in it. The high kill of *A. aegypti* proves that this treatment produces only an incomplete removal of DDT (see Table 2).

TABLE 1

Effect of Turbidity on Kill of Aedes aegypti Produced by DDT (.0015 ppm.)

Source of Water	Location	Turbidity *ppm.*	Percentage Kill in 48 Hours		
			Sample	DW plus DDT	Sample plus DDT
Small pond	Camp Chaffee, Ark.	435	0	100	96
Grassy Lake	Dale Mabry Field, Fla.	320	0	90	45
Cypress Swamp	Orlando, Fla.	290	0	—	99
Intermittent stream	Camp J. T. Robinson, Ark.	200	7	100	99
Small pond	Ft. McPherson, Ga.	77	0	75	84
Grassy Lake	Dale Mabry Field, Fla.	70	0	0	88
Greenleaf Lake	Camp Gruber, Okla.	67	0	95	84
Boardman Pond	Camp Gruber, Okla.	60	0	100	86
Sweet Water Creek	E. Point, Ga.	30	0	90	82
Rio Grande	Laredo, Tex.	30	20	100	100
Grassy Lake	Dale Mabry Field, Fla.	25	2	90	14
Grassy Lake	Dale Mabry Field, Fla.	25	8	97	97
Well water	Stuttgart AAF, Ark.	25	0	100	99
Well water	Stuttgart AAF, Ark.	25	0	70	74
Well water	Rice Expt. Sta., Ark.	25	0	100	97
Edwards Lake	Camp Wheeler, Ga.	25	0	88	89
Broadacres Lake	Camp MacKall, N.C.	25	0	88	92
Kingsley Lake	Camp Blanding, Fla.	4	3	100	95
Grassy Lake	Dale Mabry Field, Fla.	4	3	100	95
Grassy Lake	Dale Mabry Field, Fla.	3	—	93	98
Grassy Lake	Dale Mabry Field, Fla.	3	—	92	100
Sewage effluent	Camp Blanding, Fla.	25*	—	—	100

* Color 160 ppm.

The work reported in the two preceding paragraphs explains the poor kills of more resistant larval species, such as *A. crucians,* sometimes observed when treating *natural turbid waters.* Sedimentation of finely suspended matter in these waters will physically remove the greater part of the DDT that is itself held in suspension. This is similar to the removal of DDT from water by coagulation and sedimentation (see below). In addition, the small amount of DDT remaining in solution deteriorates, as shown in the tests on the effect of simple storage. These two processes lower the DDT concentration, comparatively quickly, to a point where resistant larvae are not killed. In clear water the sedimentation of DDT is at a much slower rate and the part in solution is maintained by contact with the dispersed solid phase. These considerations do not affect the experimental 48-hour kill of larvae, since the time interval between addition of DDT and larvae is not sufficient to allow operation of these factors. The larvae themselves are killed as readily by the same concentration of DDT in both clear and turbid waters.

Effect of Water Purification on Removal of DDT

The ability of water purification methods to remove DDT was studied

TABLE 2

Effect of the Sedimentation of Turbidity on the Removal of DDT From Water

DDT *ppm.*	$FeCl_3$ *ppm.*	Clay *ppm.*	Percentage Kill in 48 Hours	
			A. quadrimaculatus	*A. aegypti*
0.1	20.5	26	47	98
0.1	20.5	50	39	95
0.1	41.0	103	25	70
0.1	41.0	103	48	79
0.1	44.5	103	25	99

from January through July 1945. The city of Atlanta co-operated by permitting the laboratory to use the facilities at the water treatment plant. The effectiveness of a treatment was tested biologically during the early part of the work; later the Xanthydrol-KOH-Pyridine and the Bent's methods were used. This work brought out the following facts:

(1) Mechanical flocculation for 30 minutes with alum, followed by one hour sedimentation and decantation, removed 40 per cent of the DDT from water containing 0.1 ppm., and 50 per cent from water with 1.0 to 10.0 ppm.

(2) Mechanical flocculation for 30 minutes with ferric chloride or ferric sulfate, plus one hour of sedimentation and decanting, removed 60 per cent of the DDT from water containing 0.1 ppm. and 80 per cent from water containing 1.0 to 10.0 ppm.

(3) Mechanical flocculation for 30 minutes with alum, plus one hour of

TABLE 3

DDT Added to Raw Water, *ppm.*	Chemical Treatment, *ppm.*			Time of Flocculation, *min.*	Type of Final Treatment	Residual DDT, *ppm.*	Percentage Removal
	Alum	$FeCl_3$	$Fe_2(SO_4)_3$				
0.1	7.4			30	Decant	0.061	40
1.0	7.4			30	Decant	0.420	58
5.0	7.4			30	Decant	2.400	52
10.0	7.4			30	Decant	5.000	50
0.1		7.4		30	Decant	0.044	60
1.0		7.4		30	Decant	0.210	79
5.0		7.4		30	Decant	1.200	76
10.0		7.4		30	Decant	1.600	84
0.1			7.4	30	Decant	0.420	58
1.0			7.4	30	Decant	0.390	61
5.0			7.4	30	Decant	0.660	87
10.0			7.4	30	Decant	1.480	85
0.1	8.5			30	Paper Filter	0.018	82
0.1	8.5			30	Paper Filter	0.014	86
1.0	8.5			30	Paper Filter	0.090	91
1.0	8.5			30	Paper Filter	0.058	94
5.0	8.5			30	Paper Filter	0.195	96
10.0	8.5			30	Paper Filter	0.510	95
0.1		8.5		30	Paper Filter	0.020	80
1.0		8.5		30	Paper Filter	0.058	94
5.0		8.5		30	Paper Filter	0.170	97
10.0		8.5		30	Paper Filter	0.340	97
5.0			8.5	30	Paper Filter	0.176	97
10.0			8.5	30	Paper Filter	0.241	98

TABLE 4

DDT in Untreated Water, *ppm.*	Treatment			*A. aegypti* Percentage Kill in Treated Water	
	Coagulant	Carbon, *ppm.*	Carbon Contact Time with Mechanical Mixing, *min.*	24 Hours	48 Hours
1.0	$Al_2(SO_4)_3$	1.65	30	25	90
1.0	$Fe_2(SO_4)_3$	1.65	30	28	64
1.0	$FeCl_3$	1.65	30	2	36
1.0	$Al_2(SO_4)_3$	5.00	30	12	50
1.0	$Fe_2(SO_4)_3$	5.00	30	3	20
1.0	$FeCl_3$	5.00	30	3	39
1.0	$Al_2(SO_4)_3$	10.00	30	15	57
1.0	$Fe_2(SO_4)_3$	10.00	30	0	17
1.0	$FeCl_3$	10.00	30	2	22
1.0	$Al_2(SO_4)_3$	15.00	30	10	68
1.0	$Fe_2(SO_4)_3$	15.00	30	0	7
1.0	$FeCl_3$	15.00	30	0	4
5.0	$FeCl_3$	15.00	30	0	0
5.0	$FeCl_3$	20.00	30	0	0
10.0	$FeCl_3$	20.00	30	0	19
1.0	$FeCl_3$	1.65	15 (plus talc filter)	0	0
1.0	$FeCl_3$	5.0	30 (plus talc filter)	0	31
1.0	$FeCl_3$	10.0	15 (plus talc filter)	0	0
1.0	$FeCl_3$	15.0	15 (plus talc filter)	0	0

sedimentation and filtering, removed 84 per cent of the DDT from water containing 0.1 ppm. and 95 per cent from water containing 1.0 to 10.0 ppm.

(4) Mechanical flocculation for 30 minutes with ferric chloride or ferric sulfate, plus one hour of sedimentation and filtering, removed 80 per cent of the DDT from water containing 0.1 ppm. and 97 per cent from water containing 1.0 to 10.0 ppm.

(5) Statements 1 through 4 are substantiated by the test results shown in Table 3. The DDT in the treated water was determined by the Xanthydrol-KOH-Pyridine method. The raw water was taken from the Atlanta Water Works storage reservoirs.

(6) Practically 100 per cent of 1.0 ppm. DDT in water is removed by mechanical flocculation for 30 minutes with alum, ferric chloride or ferric sulfate; filtering; and, in addition, fifteen to 30 minutes' contact with 1.65 ppm. of activated carbon kept in suspension mechanically and then filtered out. Increasing the carbon to 5.0 ppm. removed more of the DDT. Adding talc to the coarse filter paper removed more of the fine floc and carbon containing DDT. If water containing DDT is treated with carbon and the carbon is not subsequently entirely removed, larvae placed in the water will eat the carbon and be killed. While considering the data in Table 4 it must be remembered that 0.0015 ppm. of DDT in water will kill 80 to 100 per cent of *A. aegypti* in 48 hours and frequently 60 to 80 per cent in 24 hours. Further, the tabulated results are averages of a

TABLE 5

Carbon Added and Removed With Coagulant

DDT in Untreated Water, *ppm.*	Treatment		*A. aegypti* Percentage Kill in Treated Water	
	Coagulant	Carbon, *ppm.*	24 Hours	48 Hours
0.1	$Al_2(SO_4)_3$	1.65	60	96
0.1	$Fe_2(SO_4)_3$	1.65	91	99
0.1	$FeCl_3$	1.65	55	100
0.1	$Al_2(SO_4)_3$	5.0	67	96
0.1	$Fe_2(SO_4)_3$	5.0	93	95
0.1	$FeCl_3$	5.0	52	100
0.1	$Al_2(SO_4)_3$	10.0	27	72
0.1	$Fe_2(SO_4)_3$	10.0	72	89
0.1	$FeCl_3$	10.0	52	100
0.1	$Al_2(SO_4)_3$	15.0	9	26
0.1	$Fe_2(SO_4)_3$	15.0	69	95
0.1	$FeCl_3$	15.0	50	100
1.0	$Al_2(SO_4)_3$	15.0	100	100

great many tests. There are indications that the iron salts remove more DDT than does alum.

(7) Adding the activated carbon *with* the coagulant does not remove as much of the DDT as adding it *after* the floc is removed from the water and again filtering (see Table 5).

(8) Twenty-four-hours' quiescent contact with carbon after the floc is removed does not remove the residual DDT (see Table 6).

(9) Four to 24 hours of air mixing activated carbon with settled or filtered coagulated water produced no better results than 30 minutes of mechanical stirring for the removal of DDT (see Table 7).

(10) Twenty hours of aeration following coagulation and filtering did not remove all of the DDT from waters containing 0.1 and 1.0 ppm. (see Table 8).

(11) Filtering clear water containing 0.1 and 1.0 ppm. DDT, through filter sand, anthrafilt, diatomaceous earth, sodium zeolite or the cation amberlite did not lower the DDT content to a point where it would not kill *A. aegypti* (see Table 9).

TABLE 6

Twenty-Four Hours' Quiescent Contact

DDT in Untreated Water, *ppm.*	Treatment		*A. aegypti* Percentage Kill in Treated Water	
	Coagulant	Carbon, *ppm.*	24 Hours	48 Hours
0.1	$Al_2(SO_4)_3$	1.65	40	95
0.1	$Fe_2(SO_4)_3$	1.65	86	99
0.1	$Al_2(SO_4)_3$	5.0	34	89
0.1	$Fe_2(SO_4)_3$	5.0	89	95
0.1	$FeCl_3$	5.0	16	72
0.1	$Al_2(SO_4)_3$	10.0	24	88
0.1	$Fe_2(SO_4)_3$	10.0	74	89
0.1	$FeCl_3$	10.0	11	91
0.1	$Al_2(SO_4)_3$	15.0	9	65
0.1	$Fe_2(SO_4)_3$	15.0	57	63
0.1	$FeCl_3$	15.0	0	69

TABLE 7

DDT in Untreated Water, *ppm.*	Treatment			*A. aegypti* Percentage Kill in Treated Water	
	Coagulant	Carbon, *ppm.*	Air Mixing, *hr.*	24 Hours	48 Hours
1.0	$Al_2(SO_4)_3$	1.65	24	4	42
1.0	$FeCl_3$	1.65	24	6	70
1.0	$Fe_2(SO_4)_3$	1.65	24	4	88
1.0	$FeCl_3$	1.65	4	11	66
0.1	$FeCl_3$	1.65	4	22	97
5.0	$FeCl_3$	1.65	4	95	99
5.0	$Al_2(SO_4)_3$	1.65	4	84	100
10.0	$FeCl_3$	1.65	17	99	99
10.0	$Al_2(SO_4)_3$	1.65	4	100	100
1.0	$Al_2(SO_4)_3$	5.00	24	0	9
1.0	$Fe_2(SO_4)_3$	5.00	24	1	56
1.0	$FeCl_3$	5.00	24	0	61
0.1	$FeCl_3$	5.00	4	7	68
1.0	$FeCl_3$	5.00	24	38	100
5.0	$FeCl_3$	5.00	4	74	87
10.0	$Al_2(SO_4)_3$	5.00	4	100	100
1.0	$Al_2(SO_4)_3$	10.00	24	0	13
1.0	$Fe_2(SO_4)_3$	10.00	24	0	45
1.0	$FeCl_3$	10.00	24	0	63
1.0	$Al_2(SO_4)_3$	15.00	24	0	0
1.0	$Fe_2(SO_4)_3$	15.00	24	0	2
1.0	$FeCl_3$	15.00	24	0	12
0.1	$FeCl_3$	15.00	24	1	6

(12) Filtering clear water containing 0.1 ppm. DDT through a cation and then an anion amberlite filter removed all the DDT. When the DDT was raised to 1.0 ppm., sufficient DDT passed through both filters to produce 100 per cent kill of *A. aegypti* in 24 hours (see Table 9).

The foregoing data show that the greater part of a DDT suspension in water is removed by coagulation and filtration. Among the coagulants tried, those with the iron cation removed a somewhat greater proportion of the DDT than other coagulants. This treatment apparently does not remove

TABLE 8

DDT in Untreated Water, *ppm.*	Chemical Treatment, *ppm.*		Flocculation Time, *min.*	Aeration Time, *hr.*	Treated Water Percentage Kill in 48 hr.	
	$FeCl_3$	$Fe_2(SO_4)_3$			*A. quadrimaculatus*	*A. aegypti*
0.1	12		30	20	10	74
1.0	12		30	20	91	98
0.1		10	30	20	55	100
1.0		10	30	20	91	100

DDT in solution or extremely fine suspension. If it is desired to remove the residual portions of DDT remaining after coagulation and filtration, three methods are possible: (1) storage for four or five days; (2) filtration through cation and anion zeolites; (3) intimate contact with approximately 2.0 ppm. of activated carbon after coagulation and sedimentation, but before final filtration.

Summary

DDT applied to any water gradually loses its ability to kill *A. aegypti* larvae, so that 0.0015 ppm. becomes ineffective in 48 hours and 0.1 ppm. in from ten to twelve days.

Turbidity in water has little effect on the 48-hour kill of mosquito larvae by DDT, but upon settling out will remove some of the DDT held in suspension.

The normal concentrations of DDT used in mosquito larviciding work will not produce toxic effects in warm-blooded animals drinking water so treated.

Any of the conventional water treatment processes involving coagulation, sedimentation and filtration will remove from 80 to 98 per cent of DDT in a water supply originally containing from 0.1 to 10.0 ppm.

Complete removal (to less than 0.001 ppm.) of DDT from a water supply is possible if intimate contact with activated carbon is provided for fifteen minutes after coagulation and sedimentation, but before filtration.

TABLE 9

Effect of Water Treatment on Removal of DDT

DDT in Unfiltered Water, *ppm.*	Type of Filtration	*A. aegypti* Percentage Kill	
		24 Hours	48 Hours
0.1	Anthrafilt rapid sand	—	96
0.1	Anthrafilt rapid sand	—	100
0.1	Anthrafilt rapid sand	—	97
0.1	Diatomaceous earth filter	98	—
1.0	Diatomaceous earth filter	100	—
0.1	Diatomaceous earth filter, talc and activated carbon	56	86
0.1	Sodium zeolite	—	100
0.1	Sodium zeolite	—	100
0.1	Cation amberlite	7	93
0.1	Cation and anion amberlite	2	3
1.0	Cation amberlite	100	100
1.0	Cation and anion amberlite	100	100

Acknowledgments

The author wishes to express his appreciation for the fine co-operation and assistance given him by the following enlisted men: S/Sgt. B. A. Barrington Jr., Sgt. Donald B. Barber, Cpl. A. F. Morgenthaler, Cpl. C. C. Haffey, Pfc. George V. Haden and Pfc. Vincent J. Dean.

The encouragement and guidance given the author by Col. Loren D.

Moore, M.C.; Col. M. J. Blew, Sn.C.; Major J. S. Harris, M.C.; and Major S. J. Carpenter, Sn.C., were greatly appreciated. The co-operation shown by Paul Weir, Superintendent of the Atlanta water treatment plant, and his assistants did much to make the work possible.

DISCUSSION—*Harry E. Jordan*

The papers concerning the use of DDT in controlling insect infestation in public water supplies and the removal of DDT from water to which it has been added appear to indicate the propriety of comments concerning the general policy of using this material in water treatment.

The circumstances related to the use of DDT at Alexandria, Va., which were fully recorded in this JOURNAL for November in an article by Martin Flentje, clearly indicate the necessity for courageous and positive action. Infestation of the type discussed is not widespread. It appears that, on the basis of present evidence, water treatment operators, as well as the public generally, need not anticipate that DDT is likely to be a regular addition to the list of chemicals used in water treatment.

Discussion of the subject with a nationally prominent toxicologist has led him to outline the five following comments which merit full consideration:

1. The concentration of 0.01 ppm. DDT, which has been advocated for control measures in reservoirs, is far below the dose toxic to human beings.

2. In attaining this concentration it is assumed that the utmost care would be employed to assure rapid and uniform distribution of DDT and that accumulations such as represented by emulsified material could by no possibility reach the consumer.

3. The application of DDT to drinking water should be in the hands of skilled personnel only—individuals who are fully aware of the danger involved.

4. Consumers should have full knowledge that the drinking water has been so treated.

5. While the quantity 0.01 ppm. is below the toxic threshold, we know very little about possible accumulative effects in man. In discussing the possible toxic effects of this concentration of DDT in drinking water with a prominent scientist who has made extensive studies of DDT poisoning, he professed personal reluctance to drinking water with this concentration of DDT for any extended period of time.

There is a vast array of technical and quasi-technical information being made available to the public concerning the uses, the merits and the demerits of DDT. The places where the material may be useful are not fully known. The conditions under which its use is definitely not indicated are likewise not fully known. The dangers which may accrue from continued contact with it in any form must be the subject of extended investigation before any authoritative comments upon the matter can be made. As an emergency treatment material, under the conditions outlined by Mr. Flentje in his article, DDT is clearly shown to have merits. At the present time, however, there is no concrete evidence to indicate that human beings are able to tolerate physiologically any substantial concentration of DDT continuously either in food or in drinking water.

Controlled research must be depended upon to provide the answer to such questions. Results of such research are not available at the present time.

Design and Construction of Geist Reservoir

By Claris Allen

Prin. Asst. Engr., Indianapolis Water Co., Indianapolis, Ind.

A contribution to the Journal

IN 1923, the Engineering Department staff of the Indianapolis Water Company, working under the direction of the late Leonard Metcalf, Consulting Engineer, began studies and investigations to determine ways and means of securing additional water supply for Indianapolis, Ind. The Geist Reservoir became an actuality largely due to the personal efforts of H. S. Morse, Manager of the Indianapolis Water Company since 1925, who directed and prosecuted the project.

In 1923 the population of Indianapolis was 343,000, and it was estimated that the city would grow to about 500,000 in 1940, and 600,000 in 1960. The 1940 census shows that the actual population was 386,972, with an estimated population served by the water company of about 400,000. (Figure 1 shows the population growth from 1930 to 1944.)

Indianapolis, whose population ranks twentieth in the United States, is an inland city. Unlike most large cities, it does not have the advantage of being located on a large river or lake, but must depend on small streams and ground water for its water supply. (See Fig. 1 for average daily pumpage at Indianapolis from 1930 to 1944.)

Water Sources

A study to determine a source of water supply for the city was limited to the following four sources: (1) ground water, (2) the West Fork of White River, (3) Fall Creek and (4) other minor tributaries of White River.

The Indianapolis Water Company has already substantially developed the underground supply.

The West Fork of White River has a drainage area above Indianapolis of 1,190 sq.mi. and the flow at Indianapolis in times of drought has been as low as 43 cfs. on one occasion, and frequently, for periods of weeks, the flow has been less than 100 cfs. The White River has been the main source of supply for the city for many years. Until 1943, however, no storage facilities had been developed to make more advantageous use of the available surface supply.

Fall Creek, a tributary of White River, has a drainage area of 306 sq. mi. above Indianapolis. The flow of this stream on occasion has been as low as 7.8 cfs. For weeks during the summer months the stream flow has been under 20 cfs. However, it has been found that, by impounding, a substantial increase in the city's water supply can be obtained from the stream.

The next largest tributary of White River is Eagle Creek, with a drainage area of 170 sq.mi. This stream has, on occasion, gone dry. Other minor tributaries have small drainage areas and insignificant flows.

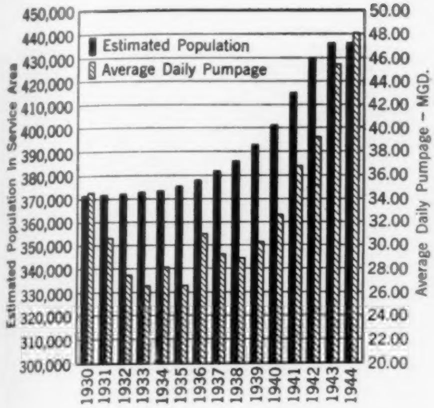


FIG. 1. Population of Indianapolis Water Co. Service Area and Average Daily Pumpage—1930–1944

Metcalf, as a result of his study made in 1923, recommended the development of a surface supply as the most dependable, and selected Fall Creek for the first step in this development.

History of the Geist Reservoir

The report submitted by Metcalf recommended that the company, as additional future water demands required, proceed with the development of two impounding reservoirs to furnish additional water supply for the city. The first of these reservoirs was to be located on Fall Creek, near the town of Oaklandon, Ind., at a point about 16 mi. northeast and upstream from Indianapolis. The other reservoir, recommended for development at a later date, was to be located on White River.

The water company initiated detailed investigations and surveys for the reservoir project on Fall Creek and began acquisition of land in 1928. The project has been named "Geist Reservoir" in honor of Clarence H. Geist, President of the Indianapolis Water Company from 1913 until his death in 1938.

Detailed topographical surveys of the basin were completed in 1930, and foundation borings and investigations at the site of the proposed dam were finished in 1931.

Investigations, design and preparation of plans progressed during the depression years after 1931, so that at the end of the depression, when the need for an increased water supply became urgent, the company was ready to begin construction of the reservoir.

Construction work was started in May 1941, and was completed sufficiently to begin storage of water on Dec. 22, 1942. The spring runoff was such that the reservoir was completely filled on Mar. 17, 1943, and it was placed in service on that date. The major construction work was completed in 1943.

The Geist Reservoir impounds sufficient water to provide a dependable 25-mgd. additional water supply average for the year, with normal variations. The utilization of this entire impounded supply is dependent upon the completion of the new Fall Creek purification plant, now developed to one-half of its ultimate capacity.

Description of the Reservoir

The reservoir occupies the valley of Fall Creek north of the town of Oaklandon. The area, for the most part, was cultivated farm land, with some scattered wooded areas.

Figure 2 is a map of the reservoir and shows the shape and location of the body of water created. Figure 3 gives a panoramic view of the area.

Table 1 shows area, capacity, elevations and other reservoir data.

Design

The hydrographic design of the reservoir was based on the runoff oc-

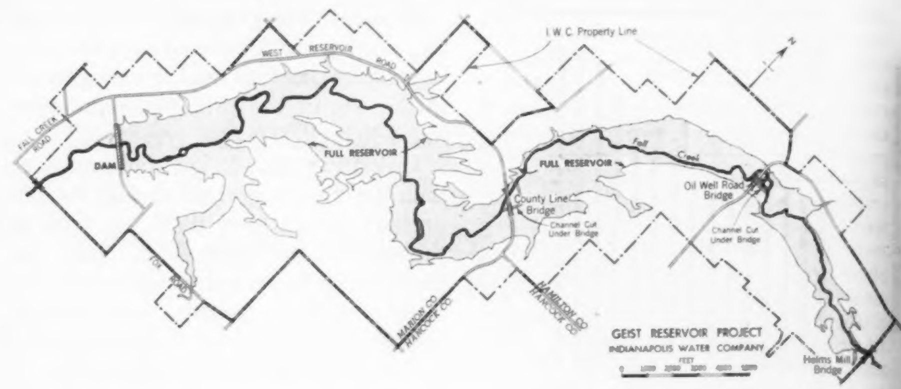


FIG. 2. Map of Geist Reservoir, Showing Shape and Location of Body of Water Created

curring during the 1930 and 1931 drought period. The 1930 and 1931 drought was the period of least runoff up to the time of the hydrographic design of the reservoir, although it was realized that later periods might produce more severe conditions. Consideration was given to the fact that existing wells could be used to supplement the reservoir supply during such periods, should they occur. The stream flow was measured at Millersville, Ind., a small village on Fall Creek, about 8 mi. above Indianapolis, where a gaging station had previously been established by the company. The stage on the stream was recorded by an automatic water level recorder. A rating curve was constructed after stream discharge measurements were made to define the stage discharge relation. The determination and publication of runoff at this station has now been taken over by the local district office of the Water Resources Branch of the U.S. Geological Survey.

The problem of determining the reservoir storage required to provide the average useful supply of 25 mgd. was solved by constructing the usual mass curve of accumulated daily stream flow, in combination with a draft curve representing withdrawal and losses from the reservoir. The mass curve represents approximate daily stream flow at the dam site. This was determined by plotting 71 per cent of the measured stream flow at Millersville, since the drainage area at the dam site is 71 per cent of the Millersville drainage area. According to many authorities, the runoff varies more nearly as the two-third's power of the ratio of the drainage areas, which in this case would be about 80 per cent; nevertheless, use of the 71 per cent factor was adopted since it would give more conservative quantities of runoff. The draft curve was constructed using an average useful demand of 25 mgd. and varying this average in direct proportion to the actual variation of the entire city's pumpage throughout the dry period studied, to which was added compensation water to the stream and evaporation loss from the reservoir.

In 1937, the U.S. Weather Bureau established an evaporation station at Indianapolis. The evaporation record from this station, when translated into

(Courtesy Mayfield-Turner Aerial Photos)

FIG. 3. Panoramic View of Geist Reservoir and Environs

TABLE 1

Data on Geist Reservoir of Indianapolis Water Company

History	
First conception of project	1923
Studies, investigations and preparation of plans	1923–1941
Construction	1941–1944
Data	
Reservoir	
Reservation area, *acres*	5,455
Water surface area, *acres*	1,800
Marginal land area, *acres*	3,655
Capacity, *mil.gal*	6,900
Length, *mi.*	7.45
Length of shore line, *mi.*	35.00
Maximum width of water surface, *mi.*	1.30
Minimum width of water surface, *ft.*	100
Average width of water surface, *mi.*	0.40
Watershed above Fortville, *sq.mi.*	175
Watershed above dam, *sq.mi.*	215
Watershed above Millersville, *sq.mi.*	306
Dam	
Over-all length of dam, *ft.*	1,900
Length of spillway, *ft.*	500
Height of dam (above valley floor), *ft.*	40
Height of dam (above original creek low water), *ft.*	47
Top width of dam, *ft.*	24
Bottom width of dam, *ft.*	230
Height of spillway (above valley floor), *ft.*	26
Height of spillway (above original creek low water), *ft.*	33
Elevation of crest of spillway (above sea level), *ft.*	785
Elevation of top of dam (above sea level), *ft.*	799
Earth work, *cu.yd.*	336,000
Concrete, *cu.yd.*	33,000
1943 flood flow, *mgd.*	5,800
1943 flood (head on spillway), *ft.*	3.0
1913 flood flow, *mgd.*	13,000
1913 flood (head on spillway), *ft.*	5.0
Maximum design flood, *mgd.*	32,000
Maximum design flood (head on spillway), *ft.*	9.5
Roads, Bridges and Miscellaneous Work	
Public roads submerged, *mi.*	3.5
Public roads vacated, *mi.*	7.5
Public roads built, *mi.*	7.0
Existing bridge structures removed	5
Bridge structures built *	2
Existing bridge structures raised	1
Costs	
Entire project (including land)	$2,500,000
Storage, per mil.gal	$362
Filter capacity (32 mgd.), per mil.gal.	$78,000

* The new bridges were designed for a 20,000-cfs. flow, with a 4-ft. clearance under the super-structure.

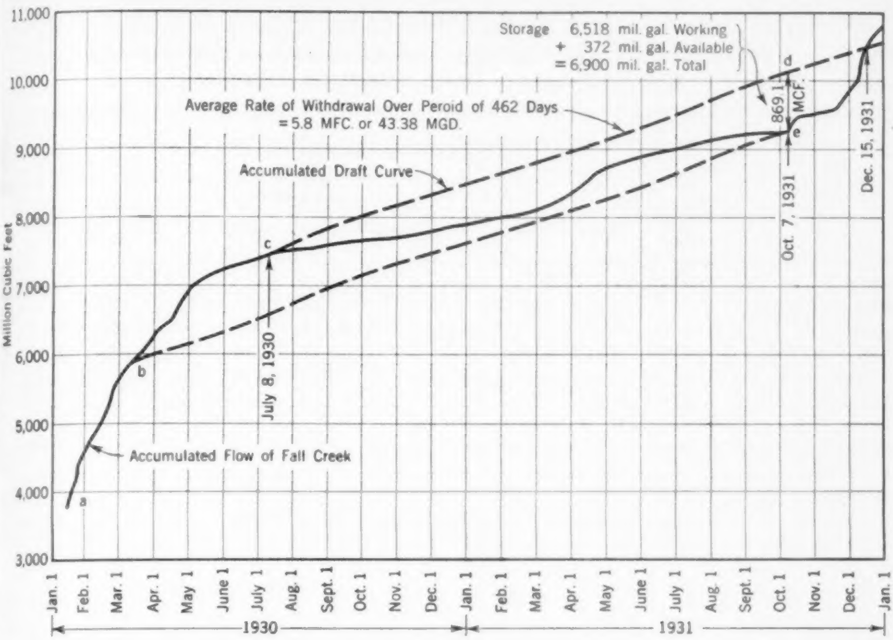


FIG. 4. Mass and Draft Curves

equivalent evaporation from pond surfaces by using the usual pan coefficient of 0.69, shows the assumed design evaporation allowances to be on the high or conservative side.

The maximum ordinate between the mass curve and the draft curve is 6,900 mil.gal., the required storage.

Figure 4 shows the mass and draft curves.

Table 2 shows the comparison between the design evaporation allowances and the U.S. Weather Bureau's Indianapolis evaporation station actual observed pan evaporation, translated into equivalent pond evaporation.

Area and capacity curves for the basin were constructed by measuring the areas at various elevations on the topographical maps. These curves, (Fig. 5), show that, to provide 6,900-mil.gal. storage, the required crest elevation of the dam spillway would need to be 785 ft. In like manner, the water area of a full reservoir at el. 785 is (from area curve) about 1,800 acres.

The site of the dam was chosen at a narrow point in the valley where the valley floor is about el. 759. Therefore, the required height of the spillway structure was found to be 26 ft. above the valley floor. Subsurface borings made on and near the proposed axis of the dam disclosed the hillside to be glacial till, composed largely of clay, with some scattered pebbles. The valley bottom under the loam topsoil is a sedimentary deposit of sand and gravel. Bedrock (limestone) on the north side of the existing creek was found at 53 ft. below the valley floor. Immediately upon crossing to the south side of the creek, the bedrock was found to take a very pronounced strike

TABLE 2

Comparison of Actual Evaporation at Indianapolis From 1937 to 1942 With Geist Reservoir Design Evaporation Allowance

Month	Evaporation Allowance for Geist Design, *ft.*	Actual Observed Pan Evaporation, *ft.*								Pond Evaporation = Pan Evaporation × 0.69 *ft.*
		1937	1938	1939	1940	1941	1942	Total	Average	
April	0.248	—	0.437	0.309	0.314	0.393	—	1.453	0.364	0.251
May	0.373	0.401	0.452	0.557	0.377	0.537	0.401	2.725	0.454	0.313
June	0.466	0.456	0.483	0.542	0.513	0.464	0.419	2.877	0.480	0.331
July	0.498	0.547	0.568	0.568	0.719	0.657	0.575	3.634	0.606	0.417
August	0.457	0.519	0.524	0.473	0.643	0.592	0.438	3.189	0.532	0.367
September	0.358	0.355	0.382	0.522	0.364	0.440	0.319	2.382	0.397	0.274
TOTAL	2.400	2.278	2.846	2.971	2.930	3.083	2.152			1.953
Monthly Average	0.400	0.455	0.475	0.496	0.489	0.514	0.431			0.326
Pond Evaporation = Pan Evaporation × 0.69		0.314	0.327	0.342	0.337	0.354	0.297			0.326

or inclination to the south and, at a point 500 ft. south of the creek, the rock was found at 87 ft. below the valley floor. The subsurface investigations were made by the water company's own forces.

In 1932, after the subsurface investigations had been made, W. N. Logan, then Indiana State Geologist, was consulted regarding the geology of the proposed dam site. Logan explained that a preglacial gorge had been cut into the limestone bedrock, the channel or channels of which probably have no relationship to the present drainage channel. This gorge probably included the present location of White River, and might have been as much as 6 or 8 mi. wide. Evidently one of the channels in this gorge passed through some distance to the south of the present Fall Creek drainage, which, at the proposed dam site, happened to be just on the north edge of that low channel. This explains the dip of the rock surface to the south disclosed by the borings.

The sand and gravel above the bedrock are a glacial deposit and fill the entire preglacial gorge, probably to about the elevation shown by the borings at the dam site. Needless to say, the whole country in that vicinity is underlain with this sand and gravel deposit, probably for the whole width of the preglacial gorge. Logan explained that the clay hillside material was formed from wind-blown material from the glacier or from the glacial drift, afterwards brought to its present topography by erosion.

Logan was of the opinion that (1) the seepage from the proposed dam would not be serious because of the fairly thick blanket of fine material overlying the sand and gravel deposit;

(2) the underflow through the sand and gravel bed partially controlled, as provided for by the design features of the dam, would not be of such quantity as to be serious; (3) much of this underflow is unlikely to escape to the south, even though the bedrock drops in that direction, as that underground reservoir is now filled with water and as the old gorge probably heads back towards the present Fall Creek drainage farther downstream; and (4) the clay material in the hillsides would probably be suitable for embankment material since it is practically impervious to water.

Design of Dam

The geology at the site of the dam dictated an earth-fill structure. An

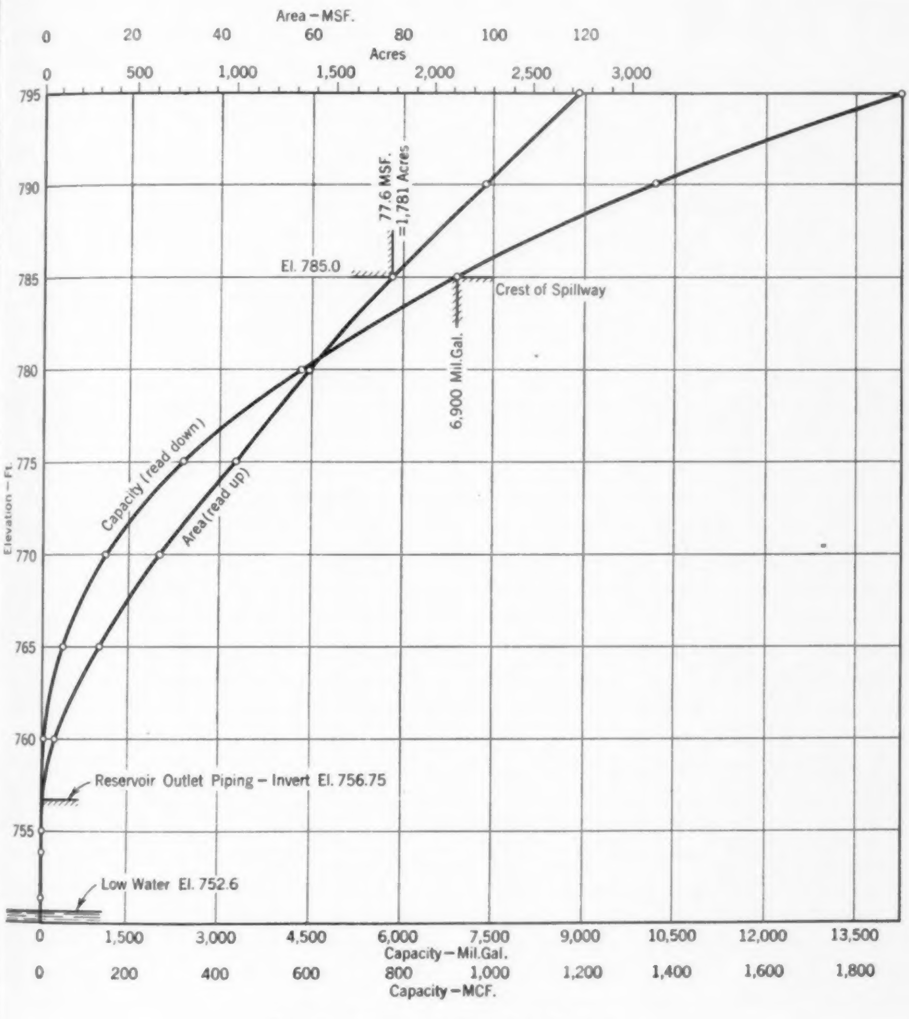


FIG. 5. Area and Capacity Curves

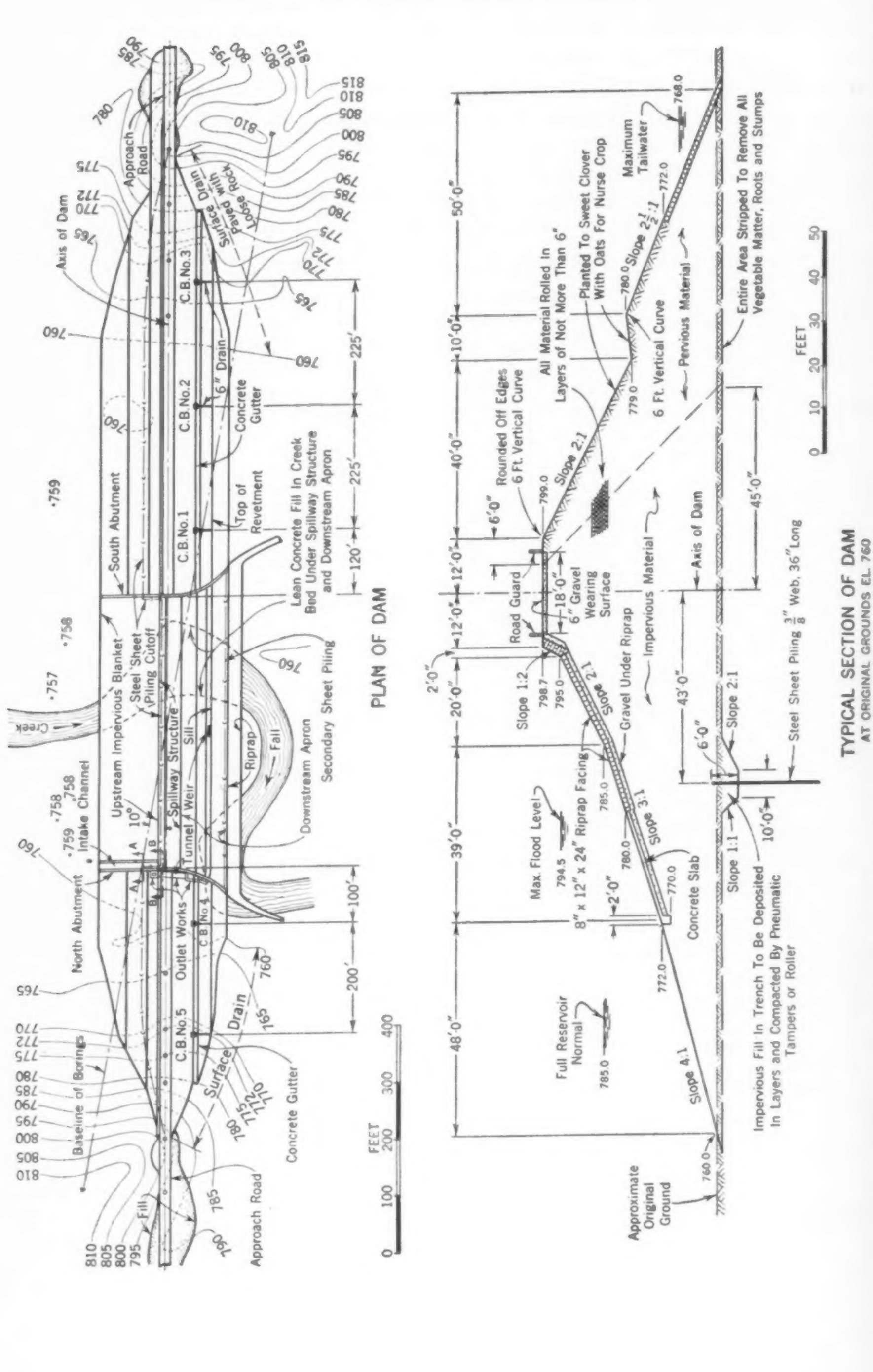


FIG. 6. *Above,* Plan of Geist Reservoir Earthfill Dam; *Below,* Typical Cross-Section

abundance of clay was available at the site with which to construct the impervious portion of the earth fill. A gravel deposit from which the pervious portion of the structure could be made was available in abundant quantities within economical hauling distance of the site. It was considered uneconomical to carry the foundations of the dam to bedrock because of its excessive depth. Therefore, the earth-fill structure was built on the valley floor and a steel sheet piling cutoff wall extending across the valley was provided to reduce the flow under the dam to an amount which would not be harmful to the structure or to the reservoir operating requirements. Inasmuch as the existing channel of Fall Creek is used to convey impounded water from the reservoir to the purification plant, percolation is of little or no significance, since it is utilized at the purification plant as useful raw water.

The length of the dam at its top elevation from hillside to hillside is approximately 1,900 ft., the central portion of which is a concrete spillway 500 ft. long. The top width of the earth embankment is 24 ft. Various slopes from 4 to 1 to 2 to 1 were used on the upstream side of the embankment. The flatter slopes on the upstream face of the embankment were selected to obtain stability when completely saturated under the reservoir water level and the steeper slopes near the top of the embankment were selected in the interest of economy, since these upper portions are not so often saturated. The downstream slope of the dam is composed of two slopes with an intermediate berm, the bottom slope being 2.5 to 1 up to the point of a safe freeboard above maximum tailwater elevation and the upper slope is made 2 to 1 in the interest of economy. The berm on the downstream slope serves to obtain the necessary width of the embankment at the lower levels and to break up water drainage on the downstream slope from the top of the dam to the valley floor. The upstream slope of the embankment is protected against washing or wave action by reinforced concrete slabs and precast concrete revetment blocks, laid loose and without mortar. Gravel, 12 in. in thickness, was placed underneath the upstream slope revetment for drainage purposes.

The embankment itself is composed of two kinds of material—impervious material in the approximate two-thirds of the structure which is upstream, and pervious material in the downstream third. The former has a very high degree of imperviousness and, consequently, the amount of water seeping through this portion of the embankment is inconsequential. Since the downstream one-third of the embankment is composed of a highly pervious gravel, any water reaching this point is rapidly conducted away with a consequent lowering of the hydraulic gradient, so that when this water reaches the downstream toe of the embankment, it is below the valley floor level.

Inasmuch as the dam is built on a pervious deposit of considerable thickness between the valley floor and the bedrock, the major problem in the design of the earth-fill embankment was to reduce the amount of flow under the dam to that quantity which provides complete safety to the embankment structure as well as to that quantity which would be less than the minimum amount of required draft from the reservoir at any one time. The problem was solved by using a steel sheet piling cutoff wall driven below

Fig. 7. Geist Reservoir Earthfill Dam

the valley floor. Water passing under the dam must travel through the pervious valley material under the dam to the cutoff wall and then vertically downward and back up under before passing on downstream.

Figure 6 shows the plan of the dam and a typical cross-section of the earth embankment. Figure 7 is a photographic view of the dam.

Spillway Structure

Studies were made to determine the estimated required discharge capacity of the spillway that would safely pass any and all expected floods without overtopping the dam. The greatest flood on record in this part of the Middlewest occurred in 1913. Known high-water elevations of this flood, together with cross-sections of the valley and measured flows of later and smaller floods, provided the data for determining the magnitude of the 1913 flood. This was estimated to be 20,000 cfs. at the dam site. The study also indicated the possibility of a maximum flood of 50,000 cfs. on this stream and the spillway was designed to pass this flood flow. The length of the spillway was made 500 ft. The spillway structure from its base at el. 750 to the crest at el. 785 is mass concrete and the shape of the structure is made to fit tightly against the under side of the falling sheet of water. This feature allows a somewhat higher coefficient of discharge to be used in the Francis wier formula than would be the case if entry of air to the under side of the falling sheet were permitted. The coefficient of discharge at the design head was chosen as 3.8. Using this coefficient, the head required to pass the maximum flood is 9.5 ft.; and the head required to pass a repetition of the 1913 flood is approximately 5.0 ft. To provide a safe freeboard, the top of the earth dam was made 14 ft. above the spillway crest.

Stability analyses of the spillway structure indicated the use of piling to support the spillway. Because proper timber is readily available in the vicinity of Indianapolis, wood piling was used.

Abutment Walls

The abutment walls retaining the earth embankments at each end of the spillway structure were designed as reinforced concrete cantilever sections. These have a maximum height of 49 ft. They were designed to resist dry earth pressure from the top of the dam to the saturation line and full hydrostatic water pressure below that point. The highest wall section has a footing thickness at the back of the vertical stem of 6½ ft., and a maximum thickness of the stem at the top of the footing of 5

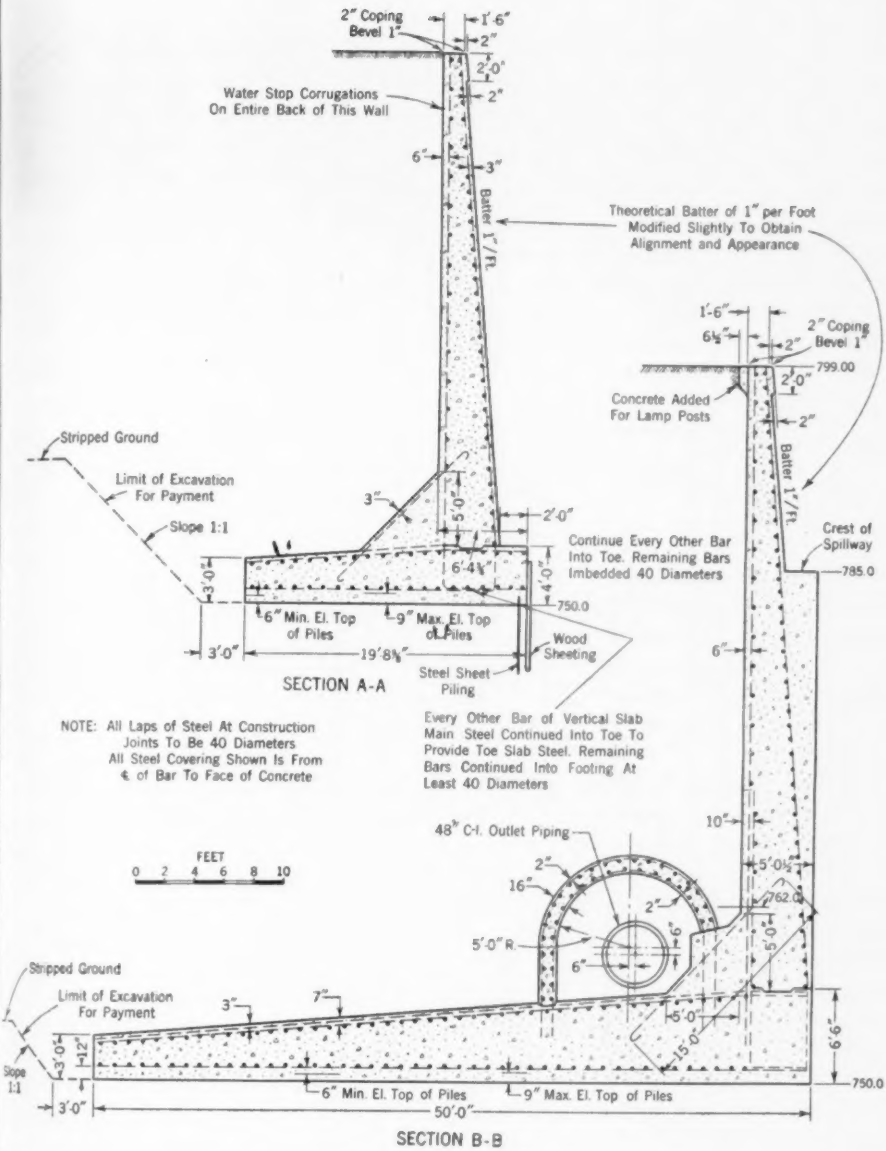


FIG. 8. Cross-Sections of North Abutment Wall, Showing Piping Tunnel

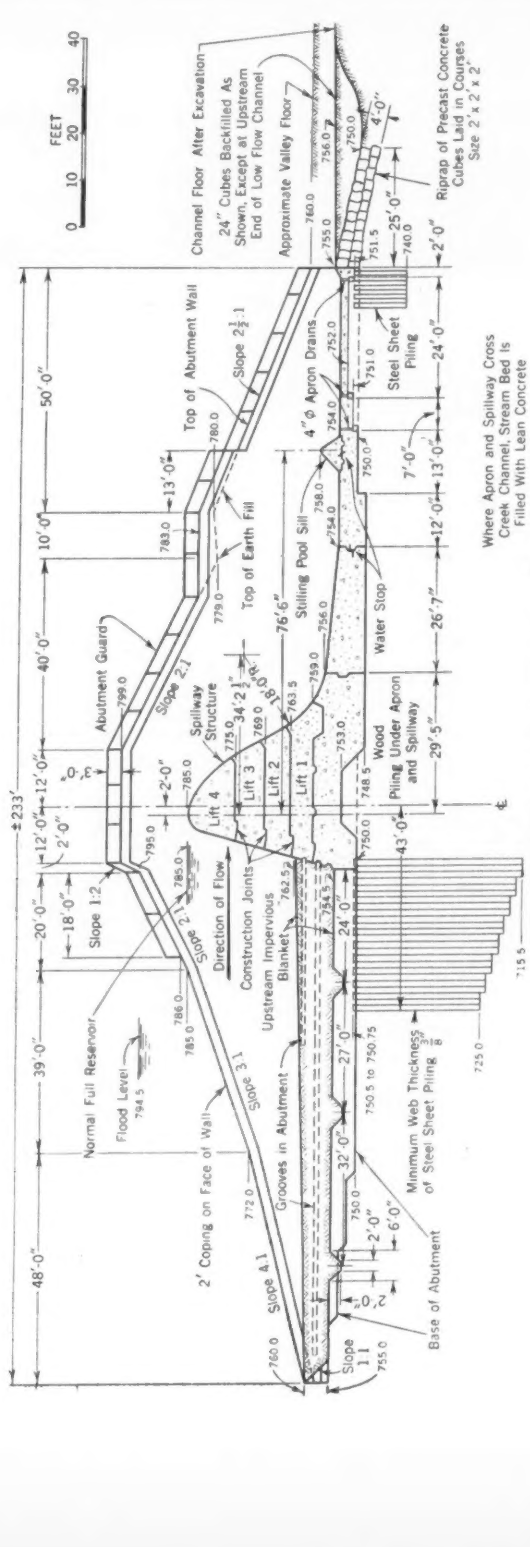


FIG. 9. Cross-Section of Spillway and Apron

ft. ½ in. This is probably one of the highest reinforced cantilever walls in the Middlewest. The walls were constructed with scoring on the back and with concrete fins to deter water from passing along the back of the wall at the contact plane with the earth embankment. The maximum main reinforcing used in these walls is 1¼-in. square bars at 5½ in. on centers in two layers.

Figure 8 shows two cross-sections of the north abutment wall.

Stilling Pool and Apron

The energy resulting from the high velocity of the falling sheet of water at the foot of the spillway is dissipated by means of the hydraulic jump. The jump occurs when the flow is discharged into a stilling pool at the foot of the spillway. After the discharge from the spillway passes through the hydraulic jump, it is then delivered downstream at a safe velocity over the apron to the creek channel below the dam. The floor of the stilling pool and the apron is made of plain concrete of sufficient thickness to resist uplift safely. Underdrains of 4-in. pipe were placed in that portion of the apron downstream from the stilling pool sill to relieve uplift.

A model of one of the preliminary designs of the spillway, pool and apron was constructed and was tested at the Fort Collins Hydraulic Laboratory of the U.S. Bureau of Reclamation. The test of this preliminary design revealed some erosive action taking place downstream from the end of the apron. The model was revised by a slight change in the lip of the downstream edge of the apron, a slight rounding of the upstream top edge of the stilling pool sill, and some shortening of the length of the apron. The model was tested again and the erosive action taking place in the first case was found to have been eliminated. In fact, the discharging water was actually transporting material upstream from the creek bed below the dam and depositing it on the apron at the stilling pool sill. That the prototype will perform in similar fashion to the model is indicated by the fact that a small amount of deposition of material on the downstream portion of the apron took place during the May 1943 flood. The flow of this flood amounted to about 9,000 cfs. It is believed that model studies are invaluable as an aid to the design of a structure of this sort.

Figure 9 shows a section through the spillway.

Outlet Works

The outlet works consist of an intake structure, outlet piping and an outlet structure. These structures are built into and are a part of the north abutment. The intake structure is a reinforced concrete pit 44 ft. high, approximately 15 ft. × 17 ft. in horizontal cross-section, provided with racks, stop plank grooves and sluice gates permitting withdrawal of water from two different levels of the reservoir. An outlet sluice gate is provided at the end of the outlet piping. The screening racks may be removed and replaced by means of a hand-operated chain hoist, suspended from a trolley beam supporting structure on top of the intake structure. This chain hoist mechanism may also be used to install or remove stop planks in the grooves immediately behind the racks. The stop planks are kept in a storage box constructed as a part of the intake structure and they may be used at times when it is desired to dewater the intake structure in case of necessary re-

pairs to or removal of any of the sluice gates. The two sluice gates at the inlet ports of the intake structure are 48 in. × 60 in. rectangular, gates being raised and lowered by means of a hand-operated stand on top of the structure. The sluice gate at the head of the outlet piping is a 54-in. circular gate operated in the same manner. The outlet piping, which carries the water from the intake structure downstream to the outlet structure, is 48-in. cast-iron piping in a reinforced concrete tunnel under the earth embankment. This tunnel is shown in Fig. 8 which also shows the maximum abutment wall section. The tunnel section is an unsymmetrical arch, springing from the back of the vertical stem of the abutment wall and from the top of the footing slab. The outlet piping (Fig. 8) is supported on concrete piers bearing on the top surface of the abutment wall footing slab. The tunnel allows inspection, as well as repair and maintenance, of the outlet piping, and is accessible from the valve chamber of the outlet structure.

The outlet structure is made of reinforced concrete and is a part of the north abutment wall. It is divided into two pits or chambers, the most upstream one being the valve pit and the downstream one being the discharge point of the water. In the valve pit portion of the outlet structure is installed a 36-in. cone valve in the 48-in. outlet piping line. This cone valve is regulated by a hand-operated stand on top of the structure. The cone valve is used for normal regulation of flow from the reservoir. The water pit of the structure has two issuing ports in its front wall, each 48 in. by 60 in., and these two ports straddle the stilling pool sill. Thus, water withdrawn from the reservoir may be discharged into the stilling pool, which is the ordinary method of operation, or it may be discharged directly to the apron immediately below the pool. These outlet ports are covered by manually operated rectangular sluice gates, similar to those used in the intake structure.

The elevation of the invert of the outlet piping is 756.75 ft. The volume of the reservoir above this elevation is 6,880 mil.gal. Since the capacity of the full reservoir is 6,900 mil.gal., there is only 20 mil.gal., or 0.3 per cent of the reservoir capacity, which is unavailable.

Gages are provided at various points so that the flow is known for operating and record purposes. An automatic recording gage is located at the upstream end of the reservoir and measures the creek inflow. Chain gages and known elevation points on the new bridges of the roads crossing the reservoir are available for determining the reservoir level and backwater elevations at flood time. Another automatic recording gage, which records the level of the water in the reservoir, is provided at the intake structure at the dam. At the outlet structure, another automatic gage provides a continuous record of the water level in the stilling pool. Near the center of the 500-ft. length of the stilling pool sill, a weir notch or depression 20 ft. long and 1 ft. deep has been constructed. The discharge from this weir notch has been measured at various times by a current meter, by gaging at a point downstream from the apron, and these measured discharges have been plotted in terms of stilling pool gage heights. Thus, the simple notch in the top of the stilling pool sill and an automatic water level recording gage is the meter or means of measuring the outflow from the reservoir. This weir notch,

after it has once been rated, is never subject to change in the calibration; therefore, a continuous accurate record of the water leaving the reservoir is available. The gaging station located at Millersville, which was previously referred to, continues in use. The flow measured at this point, when compared with the flow measured at the dam, indicates the amount of pick-up from tributary watershed area between the dam and the purification plant.

Design of Roads and Bridges

Approximately $3\frac{1}{2}$ mi. of existing township and county roads were inundated by the new impounding reservoir. On these roads, crossing Fall Creek, were four bridges. These bridges were too low for the new reservoir water level. Consequently, the bridges were removed and $7\frac{1}{2}$ mi. of roads were vacated.

New roads were constructed by the water company on high ground along the margin of the reservoir to replace the roads that had been flooded. Two new modern bridges were constructed to provide means for the public to travel from one side of the reservoir to the other. An existing through truss steel bridge near the upper end of the reservoir was raised approximately $2\frac{3}{4}$ ft. to provide the same clearance above the backwater as the bridge had above natural stream level before the reservoir was constructed.

The new roads were constructed with a roadway surface 22 ft. wide, with 7-ft. berms on each side, and with 2 to 1 slopes on fills and in cuts. Maximum grades were 3.5 per cent and the maximum curvature was 4 deg. The roads were equipped with modern drainage structures and guard rails. The section and class of construction is approximately the same as used by the Indiana State Highway Commission for primary roads, except that the roadway was surfaced with gravel instead of concrete or other pavement material.

The new bridges are of the reinforced concrete slab and girder type, supported by cantilever abutments and piers. The abutments and piers are supported by wood piling. One of the new bridges has four 40-ft. clear spans and the other has five 40-ft. spans. The approaches to the bridges are earth fills with 38-ft. top width and the side slopes are riprapped with precast concrete blocks to prevent erosion by waves.

The bridges were designed to pass a flow of 20,000 cfs. The mean velocity of the water passing through one bridge opening for a 20,000-cfs. flood flow is 6 fps., and through the waterway of the other bridge, the mean velocity is 5.5 fps. The backwater curve for the reservoir surface, for a repetition of the 1913 flood, was computed and the bridges were constructed with a clearance above this water level of 4 ft. The tops of the approach fills have a freeboard of 1 ft. above this flood elevation.

Construction of Dam

Construction of the dam began on May 26, 1941.

Clearing the area to be occupied by the dam of all timber, brush, sod and vegetation was the first work done at the site. After clearing and stripping had been completed, excavation was started in the area to be occupied by the 500-ft. spillway and the abutment walls. The well point method was used to dewater the excavated areas. The dewatering system at the area to be occupied by the footing of each abutment consisted of a 6-in. suction header,

with 1½-in. well points spaced at 5 ft. on centers and each connected to the suction header with the usual flexible rubber hose connection. The well points were all jetted into place. Two 2,000-gpm. centrifugal pumps were used on each suction header loop and this system effectively lowered the water level to well below the subgrade level of the proposed construction.

The same well point system was used to dewater the area occupied by the spillway structure and the apron.

As soon as the excavation had been completed to grade, wood pile driving began. The piles varied in length from 10 to 48 ft. and various subsurface conditions were encountered while the piling was being driven. To secure the required design loads, it was found necessary to vary the spacing of the wood piling in several instances. In some locations, wood pilings were successfully driven with a spacing of 2½-ft. centers each way. Before this unusually close spacing was adopted, a cluster of piles was driven with this minimum spacing and reference points were placed on central piles of the group. The distance between reference points was observed while surrounding piles were being driven, to make sure that there was no lateral displacement while driving. Approximately 80,000 lin.ft. of wood piling was driven on the job. The contractor used both double- and single-action steam hammers. The *Engineering News-Record* formula * was used to determine the safe bearing load of each pile as it was being driven. Loads secured varied from 14,000 to 156,000 lb. per pile.

While wood piling for the structures was being driven, installation of the steel sheet piling cutoff wall was in progress. A trench was cut with a drag line on the line of the cutoff wall and the steel sheet piling was driven into this trench. Double-action steam hammers were used for driving the piling.

After the wood piling and steel sheet piling under the abutments had been driven, forming was started for the abutment footings, the reinforcing steel was installed and the footings were concreted. The lower mat of reinforcing steel in the abutment footing was supported by chairs on top of the wood piles. The upper mat of reinforcing steel was installed on special bents. After the steel had been installed, wood piles were used as beams to span from one side of the form to the other, and the weight of the top mat of reinforcing steel was picked up and suspended from these beams and the temporary wood bents were then removed from under the steel.

Plywood was used in forming the exposed faces of the abutment walls and the downstream face of the spillway structure proper. One-inch lumber was used on all other unexposed concrete. No concrete was rubbed. Patented form ties were used throughout on all form construction.

All the concrete was mixed at the job. The concrete used in reinforced structures was made with 1-in. maximum size aggregate, 1.25 bbl. minimum cement content per yard, and a water-cement ratio not exceeding 6.6 gal. per bag of cement.

Mass concrete used for the spillway structure base, the spillway structure

* This formula is:

$$P = \frac{2Wh}{s + c}$$

where P = safe bearing load of pile, *lb.*; W = weight of hammer, *lb.*; h = drop of hammer, *ft.*; s = penetration of pile under last blow of hammer, *in.*; and $c = 1.0$ for a drop hammer and 0.1 for a steam hammer.

proper and the apron was made with 2-in. maximum aggregate size. The minimum cement content was 1.2 bbl. per cu.yd. and the water-cement ratio was not more than 6.6 gal. per bag of cement. A concrete testing laboratory was set up in the field and close supervision was exercised over the concrete operations. Laboratory trial mixes were made before any concrete was placed and these trial mixes were modified slightly after the work had started. During concreting operations, samples were taken and analyses were made of the water content of the mix, slump and workability. Cement testing was done at the manufacturer's mill. Compression cylinders were made throughout the job and these cylinders were tested sometimes at seven days, but usually at 28 days, after curing in the laboratory. Standard Portland cement was used for all the reinforced concrete structures and for the first section of spillway structure. Modified low-heat-content cement was used for all other mass concrete structures. Concrete densities from 149 lb. per cu.ft. to 159 lb. per cu.ft. were obtained. The average compressive strength of all cylinders tested was 4,475 psi. for reinforced concrete and 4,140 psi. for plain (mass) concrete.

The contractor set up the batching plant and aggregate storage pile on the high ground at the north end of the dam. Here the aggregates were batched into dump trucks (capacity 2 cu.yd.) and hauled down to the point where concreting was in progress. On the trip down from the batching plant, the truck stopped at the cement storage house where the cement was added. The cement used was secured in bags. Mixing was done with a 1-cu.yd. pavement mixer operating at the concreting point. The batch trucks backed up and discharged their batches into the skip of the mixer and, after the batch had been discharged into the mixer and mixed for one minute, it was discharged into a 1-cu.yd. bucket. The concrete was placed with the 1-cu.yd. bottom dump bucket handled by a crane. Maximum concrete production with this plant reached 40 cu.yd. per hour. All concrete was placed in the forms by means of vibrators.

All concrete was cured by being covered with burlap which was kept continuously wet for a period of fourteen days.

While concreting these structures, considerable knowledge was gained regarding internal and face temperatures of the setting concrete (Fig. 10). In December 1941, the first section of spillway structure was concreted as a monolith. This monolith contained 813 cu.yd. of concrete and was approximately 26 ft. high and 40 ft. long. The concrete was completed in 27 hours of continuous pouring time. Standard Portland cement was used and the average placing temperature of the fresh concrete was 62°F. Thermometers were suspended in pipe wells in the interior of this block of concrete so that the internal temperature could be observed, and they also were set in wells immediately inside the face of the forms so that temperature readings representing the face temperature of the concrete could be secured. At the end of two days, the internal temperature was 140°F. or, in other words, a temperature rise above the placing temperature of 78°F. Face temperatures reached a maximum of 95°F. and the internal temperature, after three weeks' time, was still 112°F. The outside air temperature varied during this period from —7°F. to 51°F. The forms were removed from this monolith 27 days

after concreting, and the block of concrete was found to have cracked vertically from top to bottom at about its mid-point. Construction joints were provided in the spillway structure at 40-ft. intervals; therefore, the crack which occurred in the first section concreted was not disastrous but merely represented another construction joint. After this experience, the method of concreting the spillway section was changed as follows:

1. Modified low-heat-content cement was used instead of standard Portland cement.

2. The vertical height was concreted in four lifts.

3. The concrete was placed with a temperature as low as possible without containing frost or frozen lumps.

After the new scheme of concreting had been adopted and placed in operation, no further cracking of mass concrete resulted. Alternate concrete lifts were poured in order to allow the ones previously concreted to cool before adding other additional lifts. This revised method of concreting reduced the temperature rise to approximately 35° F., and, by placing the concrete at temperatures as low as possible, in one case 46°F., the maximum internal temperature was 73°F. The top surface of each previously concreted lift was prepared by wire brushing when about one day old in order to roughen up the surface and promote bond with the new concrete. Before placing new concrete on the top surface of the old lift, the old concrete was covered to a depth of approximately 1 in. with grout composed of the same quantities of cement and sand used in the concrete mix. This grout mixture was spread and brushed on the roughened area of the concrete by using brooms and fiber brushes with stiff bristles.

Embankment Placing

After the cutoff wall and the abutment walls were completed, embankment placing was started. The main embankment for the the dam, as heretofore mentioned, consisted of impervious clay in the upstream two-thirds of the section, and pervious gravel in the downstream one-third. Placing impervious clay and gravel was done at the same time so that the level of both materials was about the same. The gravel was excavated from a glacial deposit near the center of the valley, about 2½ mi. upstream from the dam, and was trucked to the dam site by dump trucks. The clay was secured from borrow pits on the hillsides at each end of the dam and was excavated and transported to its final location with LeTourneau Carryall scrapers pulled by Caterpillar D-8 tractors. Approximately 114,000 cu.yd. of clay embankment was placed. The contractor, by using four LeTourneau Carryalls, was able at times to place as much as 5,000 cu.yd. of this material per day. Specifications provided that the material should be placed in layers not exceeding 7 in. in thickness when loose and compacted with ten passes of a sheep's foot roller, creating a pressure of 250 psi. of surface area on the bearing feet. The LeTourneau Carryalls roughly spread the material, and a bulldozer was used to spread the freshly placed layer uniformly. The bulldozer also pulled the sheep's foot rollers, two of which were used connected in tandem, and, therefore, one operator was able to spread and roll the freshly placed layer in one operation.

A laboratory was set up in the field so that soil tests could be made with which to supervise and control the impervious clay placing and compacting

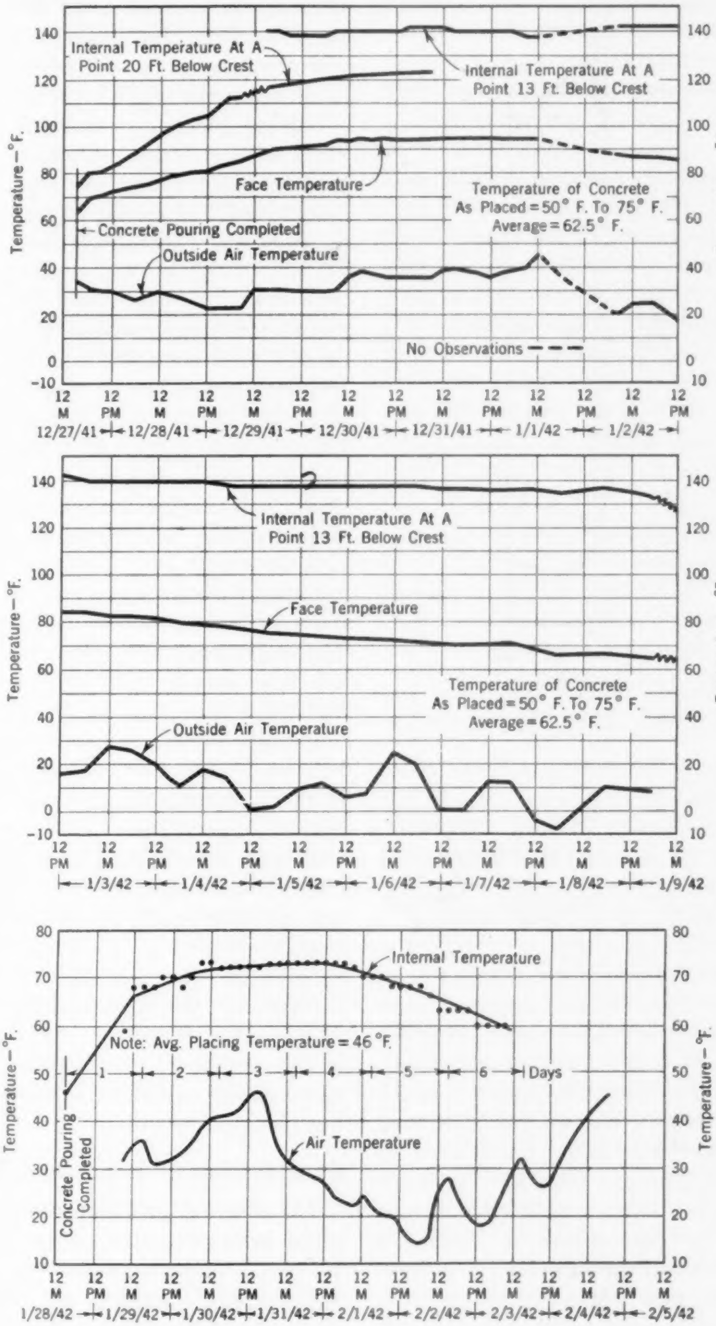


FIG. 10. Temperatures of Poured Spillway Mass Concrete

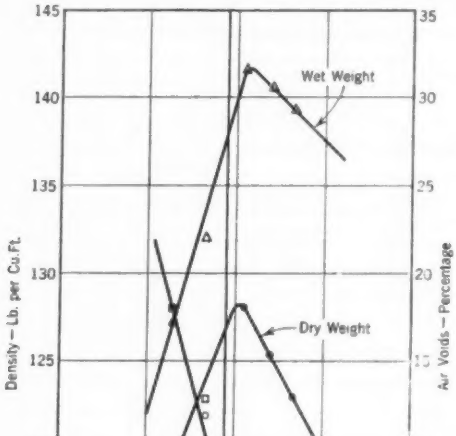


FIG. 11. Proctor Test of Impervious Material Sample From Borrow Pit

operations. Proctor tests were made on the material at many points in the borrow pit before it was excavated, and after the material had been rolled samples were taken to determine the density and degree of compaction.

Figure 11 is a diagram showing the Proctor test of one of the samples from the borrow pit. This diagram shows that for this material the original moisture content was 9.5 per cent although the optimum moisture content was 11 per cent, and the wet weight or density of the material could be made 141.4 lb. per cu.ft. The percentage of air voids at maximum wet weight was 3 per cent. The data obtained from the Proctor tests of the samples taken from the borrow pits before excavation were plotted on a map of the borrow pit areas so that the results of the embankment samples could be co-ordinated with the laboratory tests of the samples taken from the borrow pit areas.

During placing operations samples of the fill were taken so that the degree of compaction being secured could be determined. Since the impervious clay material was a glacial till and contained pebbles of various sizes, a known volume container could not be used to secure the samples from the embankment. A known volume of material from the embankment was secured by digging a hole in the embankment and filling it with a volume of sand, which had previously been dried in the laboratory to a constant weight. The weight of the sand required to fill the hole to a strike-off board allowed the volume of the embankment material removed from the hole to be determined. The embankment sample removed from the hole was taken to the laboratory and there processed so that its density and other pertinent data could be determined. Densities of samples taken from the embankment varied from 110 to 146 lb. per cu.ft.

It was found that the material as it existed in its natural state in the borrow pit contained very nearly the optimum amount of moisture and no sprinkling was needed or required throughout the embankment placing operations. However, on rainy days, it was necessary to allow the embankment to dry sufficiently before resuming placing operations.

Construction of Roads and Bridges

No unusual problems were encountered in construction of the roads and bridges. The earthwork was done by LeTourneau Carryalls, and clearing of the right-of-way was done by Cater-

piller D-8 bulldozers. Pile driving, forming and concreting were done in the usual manner.

Riprap blocks made of precast concrete, each 10 in. × 10 in. × 24 in., were used on the slopes of the approaches to the bridges, as protection against wave erosion. The blocks were made and handled by the contractor in a novel manner. Pavement forms were installed on an area previously graded level and these forms were divided into compartments having the same dimensions as the blocks. The concrete was placed by a pavement type mixer. Before the concrete had set up, a wire loop was placed in each block compartment, so that the blocks could be lifted later. The forms were dismantled after the concrete had hardened sufficiently and the blocks were removed from the forms by a crane using a sling on which were suspended short lengths of chain, with hooks. To lift, the hooks on the ends of the chains were fastened into the wire loops previously cast in the individual concrete blocks. Seven of the blocks were lifted simultaneously by the crane and were loaded on a truck. After the truck had delivered the blocks to the point of placing, a crane with a similar sling with suspended hooks was used to lift the blocks from the truck and place them on the slopes of the fills. Approximately 95,000 of these blocks were made and used on the slopes of the two roads crossing the reservoir.

Clearing

The entire area (1,800 acres), inundated by full reservoir, was cleared of all buildings, fences, existing road bridges and other structures, timber, brush and high weeds. Buildings were sold and, for the most part, were removed from the premises by the purchaser. The clearing contractor's work consisted of removing the debris at the building sites, filling wells and privy vaults, removing fences, timber and brush and burning weeds. Clean-up around the building sites was done by Caterpillar D-8 bulldozers and the fence was removed by the same equipment. Existing county road bridges were match-marked, dismantled and delivered to the county highway department yards. Of the 1,800 acres cleared, approximately 535 acres were wooded and the rest were cultivated fields and pasture with scattered trees. Trees were felled by two-man-operated crosscut saws. The logs were dragged to central points by tractors. At the central points workmen trimmed the branches off the logs and those logs which had commercial value were sold to lumber dealers. Logs without commercial value, and branches, limbs and brush were piled by a crane and burned. After the disposal of brush and timber was completed, the entire area was burned over in order to reduce the vegetation taste of the newly stored water.

Stream Diversion and Reservoir Filling

On Aug. 6, 1942, construction work at the dam, road crossings and the clearing had progressed sufficiently to allow the stream flow to be diverted from its original channel at the dam. The stream was caused to flow through the permanent outlet piping at a time of low stream flow. After diversion, the remaining 80-ft. length of the spillway structure was installed rapidly. On Dec. 22, 1942, increased stream flow caused the reservoir to begin filling in spite of the fact that the outlet

piping was discharging at full capacity. Existing county road bridge removal was under way at this time. Fortunately, the bridge removal work was completed ahead of the rising water in every case. By Dec. 29, 1942, bridge removal work had progressed sufficiently to allow the valve in the outlet piping to be closed and thus store all the available water. On Mar. 17, 1943, the rising water reached spillway crest level and first flow over the spillway began. Three days later, full stream flow was passing over the spillway.

Flood Flow—March 1943

As a result of spring rains, a flood flow occurred over the completed spillway on May 18, 1943. This flood created a head of 3.0 ft. on the 500-ft. length of the spillway and amounted to approximately 9,000 cfs. The spillway and its stilling pool performed as expected and the flood flow was delivered to the valley downstream with relatively low velocity. No scouring at the end of the apron occurred; in fact, the spillway performed in the manner in which the model studies had indicated it would. Gravel was eroded from the valley floor at a safe distance below the dam and a certain amount of this material was carried upstream and deposited on the downstream apron.

Seepage Under the Dam

Before completion of construction, flow nets were prepared and a study was made to estimate the expected seepage under the dam. It was estimated that the seepage would probably amount to about 5 cfs. Several seepage measurements were made during the summer of 1943 when no flow was occurring over the spillway. These measurements varied from 3.5 to 3.7 cfs., the average being 3.6 cfs.

Acknowledgments

Plans, design and supervision were carried out by the Engineering Staff of the Indianapolis Water Company, under the direction of W. C. Mabee, Chief Engineer, now retired. Plans, specifications, design features and part of the construction work were reviewed by the late Charles H. Paul, Consulting Engineer. C. C. Chambers, Consulting Engineer, reviewed the construction work after Mr. Paul's death. H. S. R. McCurdy, former Chief Engineer of the Philadelphia Suburban Water Company, also reviewed the design features.

Standard Methods for the Examination of Water and Sewage

Summary of Recommended Changes for the Ninth Edition

By John F. Norton

Chairman, Joint Editorial Com., Standard Methods for the Examination of Water and Sewage

A contribution to the Journal

IN preparing the manuscript for the ninth edition of *Standard Methods for the Examination of Water and Sewage,* it was evident to the Joint Editorial Committee that a rather comprehensive revision, both in organization of material and of procedures, was desirable. Since no member of the committee was in a position to undertake such a revision, the American Public Health Association and the American Water Works Association, on recommendation of the Joint Editorial Committee, asked George E. Symons, Associate Editor of *Water Works and Sewage,* to serve as editorial consultant. Dr. Symons has been at work on this revision for the past ten months. The manuscript is now complete, except for minor editorial changes. All portions have been submitted, after editing, for approval to at least one member of the committee and in some cases the proposed text has been resubmitted to special committees which had prepared the original material. The methods for sewage examination were prepared by a special committee of the Federation of Sewage Works Associations and approved by the Board of Control of that association for inclusion in *Standard Methods.* Only such changes as were necessary for conformance to the style of *Standard Methods* have been made in these methods.

The following summary of changes and additions for this ninth edition has been prepared by Dr. Symons.

A. Organization and Format

Part I includes physical and chemical methods for water analysis. These methods have been arranged independently of the type of water being analyzed. Persons interested in special types of water will find the suitable methods under the appropriate constituent for which assay is required.

Part II contains methods for the examination of sewage, sewage effluents, sludges, muds and industrial wastes. Part III includes microscopic examinations. Part IV contains bacteriological methods.

Some of the procedures listed in Appendix I (Non-standard Methods) of the eighth edition have been included as standard procedures, a few have been deleted, and a few added. Appendix II contains a new list of American Chemical Society Reagent Grade Chemicals and a new section in which are found directions for making the more common laboratory reagents. This eliminates unnecessary repetition

in the text. Directions for making special reagents are given in the main text.

The bibliographies have been revised and articles on which a method is based are listed in chronological order at the end of each section. Reference numbers have been eliminated. Cross references now include page numbers as well as parts and sections. Formulas for calculating results are included in each determination. The Index has been revised and enlarged.

B. Revision of Methods

Part I—Examination of Water—Physical and Chemical

Oxygen consumed: Omitted.

Odor: Completely revised.

Hardness: Palmitate method added.

pH: Glass electrode method added.

Carbon dioxide: Includes evolution technic and new table and graph for calculation from ionic activities.

Bicarbonate ion: Formulas for calculation.

Carbonate ion: hydroxyl ion: Precipitation methods and formulas for calculation.

Oil: Evaporation and extraction, or wet extraction.

Silica: Variations of colorimetric method added.

Arsenic: (New) Gutzeit method.

Aluminum: Colorimetric method using aurin-tricarboxylic acid.

Iron: Bipyridine and phenanthroline colorimetric methods added.

Chromium: (New) Colorimetric method using diphenylcarbazide.

Zinc: Nephelometric method only.

Calcium: Revised.

Magnesium: Titan yellow method added.

Sodium: Uranyl zinc acetate reagent.

Potassium: Colorimetric method added, using sodium cobaltinitrite and potassium dichromate.

Chloride: Both Volhard and Mohr methods.

Fluoride: Scott modification of Sanchis's Method [A.W.W.A. Committee Report. Jour. A.W.W.A. **33**: 1965 (1941)].

Ortho-phosphate: (New) Gravimetric and colorimetric using aminonaphtholsulfonic acid or stannous chloride.

Pyro-phosphate: (New) Manganous chloride separation or difference method.

Meta-phosphate: (New) Barium chloride separation or difference method.

Boron: Electrometric titration.

Cyanide: Colorimetric, using yellow ammonium sulfide.

Tannin and Lignin: (New) Colorimetric or photometric using phosphotungstic or phosphomolybdic acids.

Residual Chlorine: Completely revised by A.W.W.A. Committee [Jour. A.W.W.A., **35**: 1315 (1943)], including ortho-tolidine method, iodometric method, ortho-tolidine-arsenite method and drop dilution method for field use.

Chlorine Demand: Two methods, one for laboratory use and one for field use [A.W.W.A. Committee Report. Jour. A.W.W.A., **35**: 1315 (1943)].

Dissolved Oxygen: Revised.

Hydrogen-Sulfide: Evolution or colorimetric method or calculation from pH.

Methane: (New) Gasometric method.

Part II: Sewage, Sewage Effluents, Industrial Wastes, Polluted Waters, Sludges and Muds

The revision by the Committee of the Federation of Sewage Works Associations contains these significant changes:

Albuminoid Nitrogen: Deleted.
Organic or Total Nitrogen: Distillation into boric acid.
Nitrate Nitrogen: Revised to include technics for industrial wastes, and colored sewages.
Dissolved Oxygen: Completely revised, Alsterberg and alum flocculation method added. Dissolved oxygen in activated sludge added.
Oxygen Consumed: Procedure for brine and strong sewage added.
Biochemical Oxygen Demand: Standard dilution water, procedure for chlorinated sewage and dilution method for sludges and muds added.
Residue or Solids: New method for settleable solids:
pH: Glass electrode new standard.
Residual Chlorine: Revised to conform to technic for water, ortho-tolidine, starch iodide methods; spot plate test for field use.
Chlorine Demand: Conforms to technic for water.
Sulfides: Methylene blue colorimetric method added.
Grease: New extraction technic using petroleum ether.
Solids in Activated Sludge: (New) Aluminum dish method.

Part III. Microscopical Examination of Water, Sewage Sludge and Bottom Sediments

This has been revised and rewritten. New equipment and new forms for reporting results are included.

Part IV. Bacteriological Examination of Water

Tryptone glucose agar has been added as a plating medium, and lauryl sulfate tryptose broth for coliform test. Fuchsin broth and formate ricinoleate broth have been deleted as confirmatory media. The schematic outlines have been revised, as has the section on coliform density. Bacteriological examination of water from swimming pools is included as a standard method. The Eijkman test has been added to the section on differentiation.

Appendix I: Non-Standard Methods

New sections introduced into the Non-standard Methods include Chromium, Selenium, Volatile Acids in Digested Sludge, Oxygen Demand and Activity of Activated Sludge, Grease in Sewage Sludge (by wet extraction and by extraction of coagulated sludge), and Colorimetric pH of Sewage and Sludge.

Revised sections in Appendix I include Phenols in Water, British Bacteriological Practice and Organic Carbon in Sewage. Other sections taken from the eighth edition include pH Buffers and Indicators, Lead and Phenols in Streams.

Norwich, New York—Survival and Retirement Experience With Water Works Facilities

As of December 31, 1940

THE Norwich plant of the New York Water Service Corporation renders water service to the city of Norwich, N.Y., and adjacent areas in the town of Norwich.

Norwich, the county seat of Chenango County, is located in the south central part of the state, about 55 mi. southeast of Syracuse. The Chenango River flows through the city. It is a local trading center, largely residential but with some small industries.

As of Dec. 31, 1940, there were 2,119 metered customers being served by the plant in a territory having a population of about 8,800 people. Consumption during the year averaged approximately 0.52 mgd., equivalent to 59 gpd. per capita.

Development of the Existing System

The original plant was incorporated as the Norwich Water Works in January 1881. The works were constructed during that year and water service commenced a year later. In 1926 the New York Water Service Corporation acquired the Norwich Water Works

TABLE 1

SUMMARY OF MAINS

NORWICH, NEW YORK

Size, *in.*	Kind	No. of Feet Installed	Percentage of Total	No. of Feet Retired	Percentage of Total	No. of Feet in Service	Percentage of Total	Year of First Installation	Average Age, *yr.*
4	Cast-iron unlined	46,498	33.4	793	29.0	45,705	33.4	1881	45.3
6		46,122	33.0	224	8.2	45,898	33.5	1881	42.7
8		9,332	6.7	0		9,332	6.8	1881	54.6
10		8,207	5.9	0		8,207	6.0	1881	53.7
12		14,219	10.2	1,717	62.8	12,502	9.1	1881	48.3
14		7,002	5.0	0		7,002	5.1	1902	38.5
16		1,734	1.2	0		1,734	1.3	1902	37.5
18		784	0.6	0		784	0.6	1902	38.5
4	Cast-iron cement-lined	203	0.1	0		203	0.1	1930	7.1
6		2,560	1.8	0		2,560	1.9	1930	5.6
8		1,301	0.9	0		1,301	1.0	1936	3.7
12		1,514	1.1	0		1,514	1.1	1938	2.5
12	Wrought-iron	137	0.1	0		137	0.1	1936	4.5
TOTAL		139,613	100.0	2,734	100.0	136,879	100.0		43.6
Percentage of Total		100.00		1.96		98.04			
Average Size, *in.*		6.99		9.19		6.95			

TABLE 1 (contd.)

Mortality Survival Ratios

Size, *in.*	Kind	No. of Feet	Period Covered, *yr.*	Percentage
4	Cast-iron unlined	46,498	59.5	98.221
6	Cast-iron unlined	46,122	59.5	99.253
8	Cast-iron unlined	9,332	59.5	100.000
10 and 12	Cast-iron unlined	22,426	59.5	87.212
Over 12	Cast-iron unlined	9,520	38.5	100.000
4–12	Cast-iron cement-lined	5,578	10.5	100.000
12	Wrought-iron	137	4.5	100.000
	TOTAL	139,613		

TABLE 2

SUMMARY OF VALVES

NORWICH, NEW YORK

Size, *in.*	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*
4	122	5	117	1881	42.1
6	101	0	101	1881	38.1
8	16	0	16	1881	47.9
10	11	0	11	1881	43.4
12	23	1	22	1881	25.7
14	2	1	1	1902	38.5
16	2	0	2	1902	33.0
TOTAL	277	7	270		39.6
Percentage of Total	100.00	2.53	97.47		

Mortality Survival Ratios

Size, *in.*	Number Installed	Period Covered, *yr.*	Percentage
4	122	59.5	95.216
6	101	59.5	100.000
8	16	59.5	100.000
10 and 12	34	59.5	87.500
Over 12	4	38.5	66.667
TOTAL	277		

and in May 1929 it was merged with and became the Norwich plant of the New York Water Service Corporation, which has a number of other plants within the state. This corporation was a part of the Federal Water Service Corporation, now the Federal Water & Gas Corporation.

In 1881 the original source of water developed was on Ransford Creek, lo-

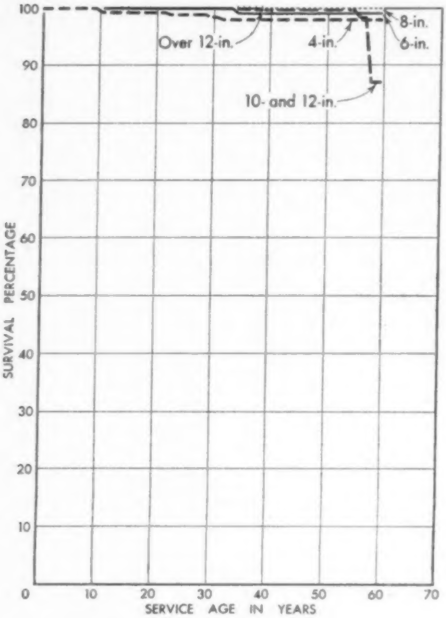


FIG. 1. Mortality Survival Curve—4–18-in. Cast-Iron Unlined Mains—Norwich, New York

BASE: Feet	SURVIVAL: 1881–1940	
SIZE	EXPOSURES	RETIREMENTS
in.	*ft.*	*ft.*
4	46,498	793
6	46,122	224
8	9,332	0
10 and 12	22,426	1,717
Over 12	9,520	0

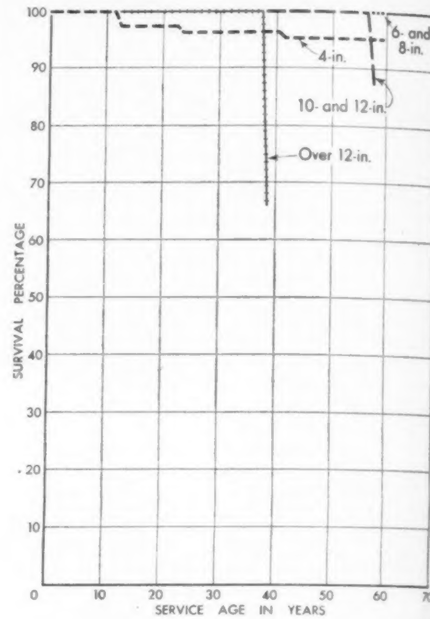


FIG. 2. Mortality Survival Curve—4–16-in. Valves—Norwich, New York

BASE: Unit	SURVIVAL: 1881–1940	
SIZE	EXPOSURES	RETIREMENTS
in.	*Units*	*Units*
4	122	5
6	101	0
8	16	0
10 and 12	34	1
Over 12	4	1

cated in the town of Norwich about 1¼ mi. northeast of the city. A reservoir, now known as Lower Reservoir No. 1, having a surface area of 6.5 acres, was formed by an earthen dam approximately 40 ft. high and 240 ft. long, receiving the drainage from 4 sq.mi. of watershed. Water was fed, without other treatment than natural settlement, through a 12-in. cast-iron main, approximately 6,500 ft. long, to the distribution system.

During 1890 and 1891, additional impoundment became necessary and a second, or upper Reservoir No. 2, was built east of the original reservoir. The new reservoir has a surface area of 9 acres formed by a 50-ft. earthen dam, 612 ft. long, 54 ft. in elevation above Reservoir No. 1. The 12-in. transmission main was extended to Reservoir No. 2, but generally the discharge is from the upper reservoir through a series of aerating nozzles to the lower reservoir.

During 1901 an additional source of supply was obtained by purchasing certain water rights at Chenango Lake

TABLE 3

SUMMARY OF HYDRANTS

NORWICH, NEW YORK

Size, *in.*	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*	Mortality Survival Percentage
4 and 5	167	53	114	1881	19.0	5.983
TOTAL	167	53	114			
Percentage of Total	100.00	31.74	68.26			

located 3 mi. northeast of Reservoir No. 1, in the town of New Berlin. Chenango Lake, with a lake surface of about 130 acres, has a drainage area of 0.78 sq.mi. The water rights acquired allowed the company to lower the water in the lake 7 ft. below normal. Water from Chenango Lake is transmitted through a 761-ft. long rock tunnel, and a 14-, 16- and 18-in. diameter pipeline 9,630 ft. to a branch of Ransford Creek down which it flows another 8,000 ft. to Reservoir No. 2.

The combined impounding capacity of the two reservoirs and Chenango Lake is approximately 314 mil.gal., of which approximately 310 mil.gal. is available for use.

A second 12-in. cast-iron transmission main was installed from Reservoir

TABLE 4

CAUSES OF RETIREMENTS OF MAINS

NORWICH, NEW YORK

Size, *in.*	Length, *ft.*	Life, *yr.*	Cause of Retirement	Salvage, *ft.*
4	283	10.5	No longer needed	283
	6	12.5	Replaced by 10-in. main	6
	129	22.5	No longer needed	129
	205	29.5	No longer needed	—
	170	31.5	Relocated because of freezing	—
	793			418
6	224	34.5	Relocated because of new bridge	60
	224			60
12	12	34.5		12
	230	53.5	Relocation of State Highway	103
	1,475	57.5	Salvaged, sold and used by plant on Long Island	1,475
	1,717			1,590

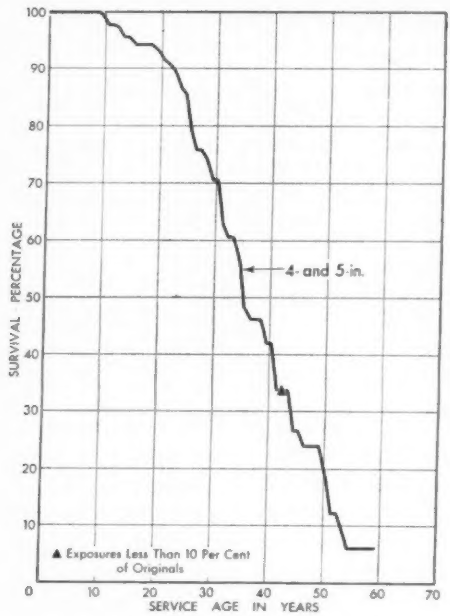


FIG. 3. Mortality Survival Curve—4- and 5-in. Hydrants—Norwich, New York

BASE: Unit	SURVIVAL: 1881–1940	
SIZE	EXPOSURES	RETIREMENTS
in.	*Units*	*Units*
4 and 5	167	53

No. 2 to the city in 1904. Both lines are approximately equivalent to existing Class A thickness.

In 1910 there was a shortage of water and therefore, in 1911, a small pumping station was installed to take water from Chenango River. Subsequently this station was dismantled and, in 1913, a standby supply was developed by installing an intake in Chenango River within the city. Water flowed by gravity through 409 ft. of 12-in. cast-iron and terra cotta pipe to a concrete suction well, 14 ft. in diameter by 19 ft. deep. In emergencies the water was pumped through pressure filters by a turbine type pump of 2,800-gpm. capacity. This emergency supply has not been used for some time and the electric motor has been transferred to another plant.

The original supply of water was delivered to consumers without treatment until 1905. In that year a filter plant was installed in the town of Norwich about 400 ft. east of the Norwich city limits. It consisted of four horizontal, rapid-sand pressure filters. Two additional filters were added in 1907. Chemical application equipment was added in 1924 and 1929.

The distribution and transmission system consists of approximately 26.7 mi. of cast-iron pipe from 4 to 18 in. in diameter and $\frac{3}{4}$- to 2-in. wrought-iron and copper pipe. It has 270 valves and 230 fire hydrants.

Basis of Study

The records of pipe, valve and hydrant installations and retirements are substantially complete from the beginning of the system.

Mortality Survival Study

Mortality studies were made of cast-iron mains, valves and hydrants. Table 1 gives a summary of the pipe installed, retired and the amount remaining in service, as well as other pertinent data. Figure 1 shows the mortality survival curves covering the record of the pipe grouped as shown.

Tables 2 and 3 give summaries of valves and hydrants and Figs. 2 and 3 show the applicable mortality survival curves.

Causes of Retirement

The causes of retirement of mains and valves respectively are shown in Tables 4 and 5.

TABLE 5

Causes of Retirements of Valves
Norwich, New York

Size, in.	Number Retired	Life, yr.	Cause of Retirement	Number Salvaged
4	2	12.5	Replaced with 10-in. main	—
	1	12.5	Renewed	—
	1	23.5	Blowoff line removed	1
	1	41.5	Retired	
	5			1
12	1	57.5	Relocation of State Highway	1
	1			1
14	1	38.5	Leaking, scrapped	0
	1			0

It was stated that the majority of retirements of hydrants were due to relocation or to damage by automobiles, in which cases the hydrants were inspected, repaired where necessary, and set in other installations.

Acknowledgment

The collection and compilation of the data in the Norwich plant were under the supervision of E. L. Heyser, Chief Valuation Engineer of the New York Water Service Corporation.

Summary of Installations and Retirements
Norwich, New York

Mains

4-in. Cast-Iron Unlined Mains

Year Installed	*Feet* *Installed*	*In Service*	*Retired*
1881	6,610	6,399	211
1883	774	774	0
1884	980	980	0
1885	1,323	1,323	0
1886	1,152	1,152	0
1889	834	834	0
1891	4,709	4,709	0
1892	2,752	2,752	0
1893	3,391	3,262	129
1894	5,306	5,306	0
1895	1,423	1,423	0
1896	396	396	0
1897	1,849	1,849	0
1899	156	156	0
1900	24	24	0
1901	1,130	1,130	0
1902	2,172	2,172	0
1903	2,100	1,930	170
1904	1,220	1,220	0
1905	825	542	283
1906	574	574	0
1907	1,160	1,160	0
1908	1,739	1,739	0
1910	489	489	0
1911	359	359	0
1912	1,268	1,268	0
1913	79	79	0
1914	12	12	0
1916	137	137	0
1918	155	155	0
1922	6	6	0
1924	59	59	0
1925	1,068	1,068	0
1927	267	267	0
1940	0	0	0
Total	46,498	45,705	793

Retirements by Years

Year Installed	*Feet*	*Year*	*Feet*	*Year*
1881	6	1893	205	1910
1893	129	1915		
1903	170	1934		
1905	283	1915		

6-in. Cast-Iron Unlined Mains

Year Installed	*Feet* *Installed*	*In Service*	*Retired*
1881	11,497	11,497	0
1882	1,030	1,030	0
1883	678	678	0
1891	2,479	2,479	0
1892	994	994	0
1893	1,056	1,056	0
1894	2,035	2,035	0
1895	1,514	1,514	0
1896	1,289	1,289	0
1897	1,602	1,602	0
1898	159	159	0
1900	313	313	0
1901	363	363	0
1902	1,042	818	224
1903	776	776	0
1904	1,202	1,202	0
1905	180	180	0
1906	1,789	1,789	0
1907	1,595	1,595	0
1908	1,311	1,311	0
1909	776	776	0
1910	1,128	1,128	0
1911	3,341	3,341	0
1912	1,859	1,859	0
1913	1,046	1,046	0
1914	847	847	0
1915	1,676	1,676	0
1916	1,506	1,506	0
1917	246	246	0
1918	23	23	0
1921	35	35	0
1922	715	715	0
1926	20	20	0
1940	0	0	0
Total	46,122	45,898	224

Retirements by Years

Year Installed	*Feet*	*Year*
1902	224	1936

8-in. Cast-Iron Unlined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1881	6,054	6,054	0
1884	900	900	0
1889	692	692	0
1892	507	507	0
1904	542	542	0
1910	352	352	0
1912	285	285	0
1940	0	0	0
Total	9,332	9,332	0

10-in. Cast-Iron Unlined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1881	5,280	5,280	0
1893	1,507	1,507	0
1894	867	867	0
1914	553	553	0
1940	0	0	0
Total	8,207	8,207	0

12-in. Cast-Iron Unlined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1881	8,103	6,398	1,705
1904	6,100	6,088	12
1905	16	16	0
1940	0	0	0
Total	14,219	12,502	1,717

Retirements by Years

Year Installed	Feet	Year	Feet	Year
1881	230	1936	1,475	1938
1904	12	1938		

14-in. Cast-Iron Unlined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1902	7,002	7,002	0
1940	0	0	0
Total	7,002	7,002	0

16-in. Cast-Iron Unlined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1902	1,512	1,512	0
1905	94	94	0
1913	128	128	0
1940	0	0	0
Total	1,734	1,734	0

18-in. Cast-Iron Unlined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1902	784	784	0
1940	0	0	0
Total	784	784	0

4-in. Cast-Iron Cement-Lined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1930	30	30	0
1934	173	173	0
1940	0	0	0
Total	203	203	0

6-in. Cast-Iron Cement-Lined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1930	824	824	0
1931	155	155	0
1936	396	396	0
1937	218	218	0
1938	167	167	0
1939	800	800	0
1940	0	0	0
Total	2,560	2,560	0

8-in. Cast-Iron Cement-Lined Mains

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1936	307	307	0
1937	994	994	0
1940	0	0	0
Total	1,301	1,301	0

12-IN. CAST-IRON CEMENT-LINED MAINS

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1938	1,514	1,514	0
1940	0	0	0
TOTAL	1,514	1,514	0

12-IN. WROUGHT-IRON MAINS

Year Installed	Feet: Installed	Feet: In Service	Feet: Retired
1936	137	137	0
1940	0	0	0
TOTAL	137	137	0

VALVES

4-IN. VALVES

Year Installed	Number: Installed	Number: In Service	Number: Retired
1881	20	16	4
1883	2	2	0
1884	1	1	0
1885	1	1	0
1886	1	1	0
1891	9	9	0
1892	8	8	0
1893	11	11	0
1894	13	13	0
1895	4	4	0
1896	1	1	0
1897	4	3	1
1901	2	2	0
1902	3	3	0
1903	4	4	0
1904	3	3	0
1905	3	3	0
1906	2	2	0
1907	4	4	0
1908	5	5	0
1910	1	1	0
1911	1	1	0
1912	7	7	0
1916	1	1	0
1918	1	1	0
1922	2	2	0
1923	1	1	0
1924	2	2	0
1925	2	2	0
1930	2	2	0
1939	1	1	0
1940	0	0	0
TOTAL	122	117	5

Retirements by Years

Year Installed	Number	Year	Number	Year	Number	Year
1881	2	1893	1	1904	1	1922
1897	1	1909				

6-IN. VALVES

Year Installed	Number: Installed	Number: In Service	Number: Retired
1881	20	20	0
1882	3	3	0
1883	1	1	0
1891	3	3	0
1892	2	2	0
1893	1	1	0
1894	3	3	0
1895	3	3	0
1896	1	1	0
1897	2	2	0
1898	1	1	0
1900	3	3	0
1901	1	1	0
1902	2	2	0
1904	4	4	0
1906	5	5	0
1907	1	1	0
1908	2	2	0
1909	2	2	0
1910	3	3	0

6-in. Valves (contd.)

Year Installed	Number Installed	In Service	Retired
1911	7	7	0
1912	7	7	0
1913	3	3	0
1914	2	2	0
1915	5	5	0
1916	5	5	0
1917	1	1	0
1921	1	1	0
1930	2	2	0
1931	1	1	0
1937	1	1	0
1939	3	3	0
1940	0	0	0
Total	101	101	0

8-in. Valves

Year Installed	Number Installed	In Service	Retired
1881	8	8	0
1889	1	1	0
1891	2	2	0
1904	1	1	0
1910	2	2	0
1912	1	1	0
1936	1	1	0
1940	0	0	0
Total	16	16	0

10-in. Valves

Year Installed	Number Installed	In Service	Retired
1881	4	4	0
1893	2	2	0
1904	2	2	0
1913	1	1	0
1914	1	1	0
1923	1	1	0
1940	0	0	0
Total	11	11	0

12-in. Valves

Year Installed	Number Installed	In Service	Retired
1881	4	3	1
1904	4	4	0
1905	3	3	0
1911	1	1	0
1913	3	3	0
1936	2	2	0
1938	5	5	0
1940	1	1	0
Total	23	22	1

Retirements by Years

Year Installed	Number	Year
1881	1	1938

14-in. Valves

Year Installed	Number Installed	In Service	Retired
1902	2	1	1
1940	0	0	0
Total	2	1	1

Retirements by Years

Year Installed	Number	Year
1902	1	1940

16-in. Valves

Year Installed	Number Installed	In Service	Retired
1902	1	1	0
1913	1	1	0
1940	0	0	0
Total	2	2	0

HYDRANTS

4- and 5-in. Hydrants

Year Installed	*Number Installed*	*Number In Service*	*Number Retired*	*Year Installed*	*Number Installed*	*Number In Service*	*Number Retired*
1881	12	0	12	1918	9	7	2
1882	5	0	5	1919	26	26	0
1883	4	1	3	1920	4	4	0
1884	1	1	0	1921	2	2	0
1889	2	0	2	1922	11	11	0
1891	4	0	4	1923	1	1	0
1892	1	1	0	1925	2	2	0
1893	2	1	1	1928	3	3	0
1894	2	0	2	1929	4	4	0
1895	1	0	1	1930	6	6	0
1896	2	0	2	1931	3	3	0
1897	9	2	7	1932	4	4	0
1904	2	0	2	1933	1	1	0
1906	3	2	1	1934	3	3	0
1907	1	0	1	1935	1	1	0
1909	1	0	1	1936	1	1	0
1910	2	0	2	1937	2	2	0
1911	1	0	1	1938	4	4	0
1912	7	6	1	1939	3	3	0
1913	2	2	0	1940	1	1	0
1915	4	2	2				
1916	7	6	1	Total	167	114	53
1917	1	1	0				

Retirements by Years

Year Installed	*Number*	*Year*	*Number*	*Year*	*Number*	*Year*	*Year Installed*	*Number*	*Year*	*Number*	*Year*	*Number*	*Year*
1881	2	1912	1	1916	4	1922	1897	2	1912	3	1922	1	1929
	2	1925	1	1932	1	1934		1	1931				
	1	1935					1904	1	1916	1	1928		
1882	1	1917	1	1921	2	1932	1906	1	1915				
	1	1933					1907	1	1932				
1883	1	1912	1	1918	1	1929	1909	1	1922				
1889	1	1918	1	1923			1910	1	1930	1	1938		
1891	1	1912	2	1922	1	1930	1911	1	1921				
1893	1	1915					1912	1	1931				
1894	1	1920	1	1930			1915	1	1928	1	1938		
1895	1	1930					1916	1	1939				
1896	1	1922	1	1940			1918	1	1928	1	1938		

Sag Harbor, New York—Survival and Retirement Experience With Water Works Facilities

As of December 31, 1940

THE villages of Sag Harbor and North Hampton, N.Y., and surrounding area lying within the towns of Southampton and East Hampton, Suffolk County, located on the eastern end of Long Island, receive water service from the Sag Harbor plant of the New York Water Service Corporation, a private corporation.

These villages are small, largely residential in character and are located in the summer resort area of eastern Long Island.

For the year ending 1940 the company furnished water to 559 customers in a territory having a population of approximately 2,600. Sales of water averaged 0.083 mgd., which is equivalent to 32 gpd. per capita.

Development of the Existing System

The Sag Harbor Water Company was incorporated on Dec. 19, 1888. Plant construction was started in March of 1889 and water service commenced in the latter part of the year. In 1893 the Fahys Watch Case Company acquired control of the water company and operated the plant until August 1928 when Francis W. Collins took over the management.

In June 1930 the Federal Water Service Corporation acquired control of the Sag Harbor Water Company. In November it was merged with and became the Sag Harbor plant of the New York Water Service Corporation, a subsidiary of Federal Water & Gas Corporation.

The original source of water supply was secured from four dug wells located in the southern part of the village of Sag Harbor. Because of the high iron content of the water from these wells, in 1897, the company secured permission to take water from Long Pond, located in the town of Southamption just south of Sag Harbor. The water flows from Long Pond northwesterly down Ligonee Brook about 1,700 ft. and thence through 590 ft. of 12-in. diameter terra cotta pipe to a brick basin constructed in one of the wells. Water was allowed to coagulate in this basin and then was pumped into the system by steam driven pumps.

In 1920 the company purchased land on three sides of Long Pond and erected a small concrete dam 4 ft. high and about 19 ft. long at the northwest corner. The top of the dam is only 10.7 ft. above sea level. In 1922 the flow from Long Pond was increased by deepening Ligonee Brook and a concrete intake and screen chamber were constructed at the lower end and connected to the 12-in. terra cotta pipeline.

In 1924 an electric pumping station was erected and the operation of the steam station was discontinued.

Two wells were installed to augment the supply, one in 1926 and the other in 1931. The first well was 6 in. in diameter and 55 ft. deep. The second well is a 10-in. well 129 ft. deep. The 6-in. well was not in use in 1940 but was in reserve and had a potential yield

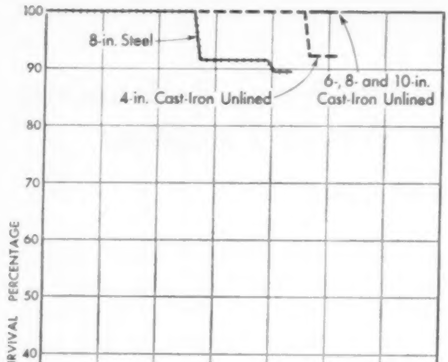


Fig. 1. Mortality Survival Curve—4–10-in. Cast-Iron Unlined and 8-in. Steel Mains—Sag Harbor, New York

Base: Feet Survival: 1889–1940

Size	Kind	Exposures	Retirements
in.		*ft.*	*ft.*
4	Cast-Iron Unlined	26,231	1,100
6	Cast-Iron Unlined	9,919	0
8	Cast-Iron Unlined	2,050	0
10	Cast-Iron Unlined	2,871	0
8	Steel	1,025	104

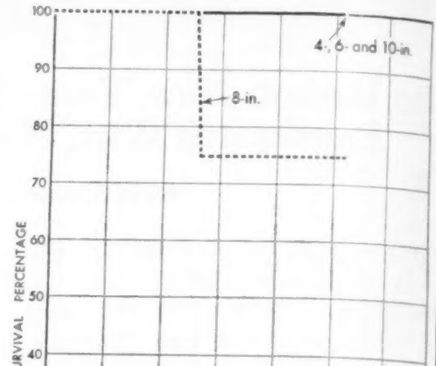


Fig. 2. Mortality Survival Curve—4–10-in. Valves—Sag Harbor, New York

Base: Unit Survival: 1889–1940

Size	Exposures	Retirements
in.	*Units*	*Units*
4	46	0
6	10	0
8	9	2
10	2	0

of 0.4 mgd. The 10-in. well was in use and yielded, on an average, 0.576 mgd.

In 1937 the boilers and all steam equipment were removed from the original steam station and two steel pressure filters were installed. Water now is pumped from the wells to an aerator through which it flows by gravity to a coagulating basin and thence through a sedimentation basin. It is then pumped through the pressure filters to the distribution system.

The pumping equipment consists of two 300-gpm., duplex high-lift pumps, driven by 15-hp. motors installed in 1924 and a low-lift, 300-gpm. centrifugal well pump, installed in 1937.

Water storage facilities consist of an open steel standpipe, 20 ft. in diameter by 100 ft. high, capacity 235,000 gal., erected in 1889 in Sag Harbor, with overflow at an elevation of 136 ft.

As of Dec. 31, 1940, the company had in service approximately 8 mi. of pipe from 1 to 10 in. in diameter, with 66 valves and 70 fire hydrants. Metered customers numbered 257 and flat rate customers 302.

TABLE 1

Summary of Mains

Sag Harbor, New York

Size, in.	Kind	No. of Feet Installed	Percentage of Total	No. of Feet Retired	Percentage of Total	No. of Feet in Service	Percentage of Total	Year of First Installation	Average Age, yr.
4	Cast-iron unlined	26,231	58.3	1,100*	91.40	25,131*	57.40	1889	40.4
6	Cast-iron unlined	9,919	22.1	0	0	9,919	22.70	1889	47.1
8	Cast-iron unlined	2,250	5.0	0	0	2,250	5.10	1889	46.1
10	Cast-iron unlined	2,871	6.4	0	0	2,871	6.60	1889	51.5
6	Cast-iron cement-lined	2,672	5.9	0	0	2,672	6.10	1936	11.8
8	Steel	1,025	2.3	104†	8.60	921	2.10	1897	43.1
Total		44,968	100.0	1,204	100.00	43,764	100.00		40.6
Percentage of Total		100.00		2.68		97.32			
Average Size, *in.*		5.2		5.3		5.2			

Mortality Survival Ratios

Size, *in.*	Kind	No. of Feet	Period Covered, *yr.*	Percentage
4	Cast-iron unlined	26,231	51.5	92.239
6–10	Cast-iron unlined	15,040	51.5	100.000
6	Cast-iron cement-lined	2,672	4.5	100.000
8	Steel	1,025	43.5	89.733
Total		44,968		

* Dredging of channel in bay required installation at different location. Abandoned.
† Abandoned because of new pump station and filter installation.

TABLE 2

Summary of Valves

Sag Harbor, New York

Size, *in.*	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*
4	46	0	46	1889	41.3
6	10	0	10	1889	41.8
8	9	2*	7	1889	46.5
10	2	0	2	1889	51.5
Total	67	2	65		42.2
Percentage of Total	100.00	2.99	97.01		

TABLE 2 (contd.)

Mortality Survival Ratios

Size, *in.*	Number Installed	Period Covered, *yr.*	Percentage
4	46	51.5	100.000
6	10	51.5	100.000
8	9	51.5	75.000
10	* 2	51.5	100.000
TOTAL	67		

* Abandoned because of new pump station and filter installation.

Basis of Study

The records of the system with reference to pipe and valves are complete from the original date of installation.

Mortality Survival Study

Mortality studies of mains and valves were made. Table 1 is a summary of mains installed, retired and remaining in service, as well as other pertinent data relating thereto. Figure 1 shows the mortality survival curves covering the above record.

Table 2 and Fig. 2 are similar summary and mortality survival curves covering valves installed and retired.

Causes of Retirement

The causes of retirement of mains and valves are shown in footnotes in Tables 1 and 2, respectively.

Acknowledgment

The collection and compilation of data for the study in the Sag Harbor plant were under the general supervision of E. L. Heyser, Chief Valuation Engineer of the New York Water Service Corporation.

Summary of Installations and Retirements
Sag Harbor, New York

MAINS

4-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1889	12,170	12,170	0
1891	2,003	903	1,100
1900	581	581	0
1902	2,548	2,548	0
1904	462	462	0
1906	1,460	1,460	0
1907	2,406	2,406	0
1916	620	620	0
1920	213	213	0
1921	252	252	0
1926	1,764	1,764	0
1927	1,752	1,752	0
1940	0	0	0
Total	26,231	25,131	1,100

Retirements by Years

Year Installed	*Feet*	*Year*
1891	1,100	1937

6-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1889	8,260	8,260	0
1891	792	792	0
1937	867	867	0
1940	0	0	0
Total	9,919	9,919	0

8-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1889	2,005	2,005	0
1924	25	25	0

8-in. Cast-Iron Unlined Mains (contd.)

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1937	20	20	0
1940	0	0	0
Total	2,250	2,250	0

10-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1889	2,871	2,871	0
1940	0	0	0
Total	2,871	2,871	0

6-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1936	105	105	0
1937	244	244	0
1938	149	149	0
1939	366	366	0
1940	1,808	1,808	0
Total	2,672	2,672	0

8-in. Steel Mains

Year	Feet		
Installed	*Installed*	*In Service*	*Retired*
1897	1,013	909	104
1924	12	12	0
1940	0	0	0
Total	1,025	921	104

Retirements by Years

Year Installed	*Feet*	*Year*	*Feet*	*Year*
1897	86	1924	18	1937

VALVES

4-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1889	26	26	0
1900	2	2	0
1902	2	2	0
1904	2	2	0
1906	3	3	0
1907	4	4	0
1916	1	1	0
1921	1	1	0
1926	3	3	0
1939	1	1	0
1940	1	1	0
Total	46	46	0

6-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1889	7	7	0
1891	1	1	0
1936	1	1	0
1937	1	1	0
1940	0	0	0
Total	10	10	0

8-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1889	6	6	0
1897	2	0	2
1924	1	1	0
1940	0	0	0
Total	9	7	2

Retirements by Years

Year Installed	Number	Year
1897	2	1924

10-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1889	2	2	0
1940	0	0	0
Total	2	2	0

Rochester (Suburban), New York—Survival and Retirement Experience With Water Works Facililities

As of December 31, 1940

THE Rochester plant of the Rochester & Lake Ontario Water Service Corporation, a private utility, renders water service in the towns of Greece, Gates, Brighton, Pittsford, Irondequoit, Penfield and Periton, portions of the 10th, 18th, 21st, 23rd and 24th Wards of the city of Rochester and the villages of East Rochester, Penfield and Pittsford. The company also sells water wholesale to other villages and water districts for resale to customers located therein. These communities are located in Monroe County suburban to the city of Rochester, N.Y.

The territory served by the Rochester plant is predominantly residential in character, although a few industries are located in the service area. As of Dec. 31, 1940, there were 15,570 customers, including three villages and nineteen water districts. There were in service approximately 229 mi. of mains with 683 valves and 1,210 fire hydrants. Sales in a service area having a population of 110,300 amounted to an average of 6.4 mgd., which is equivalent to 58 gpd. per capita.

Development of the Existing System

The Rochester & Lake Ontario Water Company was incorporated on Dec. 30, 1902. Plant construction was started in July 1903 and the first water service rendered in December 1904. Control of the Rochester & Lake Ontario Water Company was acquired by the New York Water Service Corporation, in turn controlled by the Federal Water Service Company, in November 1927. In January 1928 the Rochester & Lake Ontario Water Company was consolidated with the Clyde Water Supply Company to form the Rochester & Lake Ontario Water Service Corporation. The plant serving the area around Rochester is known as the Rochester plant .

The supply of water comes from Lake Ontario and is obtained through an intake crib located about 4,300 ft. offshore, 21 ft. below normal lake level. The water flows from the intake crib through a 24-in. diameter cast-iron intake line into an intake well, located at the Charlotte pumping station.

The water is pumped by low-lift pumps from the intake well to two sedimentation basins, each having a capacity of 0.9 mil.gal. The settled water flows from these basins into two suction wells where it is picked up by high-lift pumps which pump through pressure filters to the distribution system. The water is treated before entering the intake well and at points in passing through the station with sulfate of alumina, lime, copper sulfate, ammonia, activated carbon and chlorine.

The primary station of the company is the Charlotte pumping station. It is located on the shore of Lake Ontario

TABLE 1

SUMMARY OF MAINS

ROCHESTER (SUBURBAN), NEW YORK

Size, *in.*	Kind	No. of Feet Installed	Percentage of Total	No. of Feet Retired	Percentage of Total	No. of Feet in Service	Percentage of Total	Year of First Installation	Average Age, *yr.*
4	Cast-iron unlined	7,632	1.2	983	14.5	6,649	1.0	1905	31.8
6		179,997	27.6	2,321	34.3	177,676	27.6	1905	29.1
8		152,729	23.4	342	5.1	152,387	23.6	1905	28.7
10		4,800	0.7	0	0	4,800	0.7	1908	32.5
12		44,332	6.8	252	3.7	44,080	6.8	1905	34.0
20		139,920	21.4	2,345	34.6	137,575	21.3	1905	25.3
24		294	0.0	0	0	294	0	1926	14.5
6	Cast-iron cement-lined	72,973	11.2	6	0.1	72,967	11.3	1927	9.3
8		26,208	4.0	502	7.4	25,706	4.0	1927	9.8
12		8,778	1.4	0	0	8,778	1.4	1928	10.8
16		3,481	0.5	21	0.3	3,460	0.5	1931	6.7
20		6,442	1.0	0	0	6,442	1.0	1930	10.1
24		4,530	0.7	0	0	4,530	0.7	1930	10.5
20	Steel	528	0.1	0	0	528	0.1	1928	12.5
TOTAL		652,644	100.0	6,772	100.0	645,872	100.0		24.9
Percentage of Total		100.00		1.04		98.96			
Average Size, *in.*		10.4		11.1		10.4			

Mortality Survival Ratios

Size, *in.*	Kind	No. of Feet	Period Covered, *yr.*	Percentage
4	Cast-iron unlined	7,632	35.5	86.947
6		179,997	35.5	97.918
8		152,729	35.5	99.578
10 and 12		49,132	35.5	99.470
Over 12		140,214	35.5	97.765
6	Cast-iron cement-lined	72,973	13.5	99.990
8		26,208	13.5	96.098
12		8,778	12.5	100.000
Over 12		14,453	10.5	99.852
20	Steel	528	12.5	100.000
TOTAL		652,644		

about 1,500 ft. west of the corporate limits of the city of Rochester in the town of Greece. It consists of one large building, erected in 1904, housing boilers, pumping and purification equipment, office and laboratory and, adjacent, two sedimentation basins and smaller auxiliary structures.

The main part of the station houses two water tube boilers equipped with stokers and auxiliaries; two steam-driven high-lift pumps, installed in 1905; one steam-driven low-lift pump, installed in 1907; two electric motor-driven low-lift pumps, one installed in 1923, and one in 1933; and three elec-

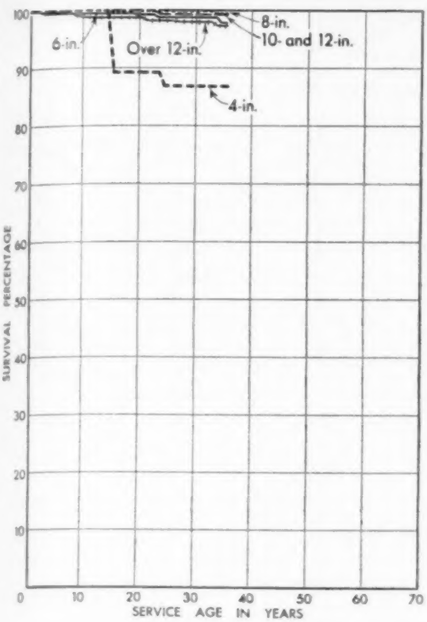


Fig. 1. Mortality Survival Curve—4–24-in. Cast-Iron Unlined Mains—Rochester (Suburban), New York

Base: Feet	Survival: 1905–1940	
Size	Exposures	Retirements
in.	*ft.*	*ft.*
4	7,632	983
6	179,997	2,321
8	152,729	342
10 and 12	49,132	252
Over 12	140,214	2,345

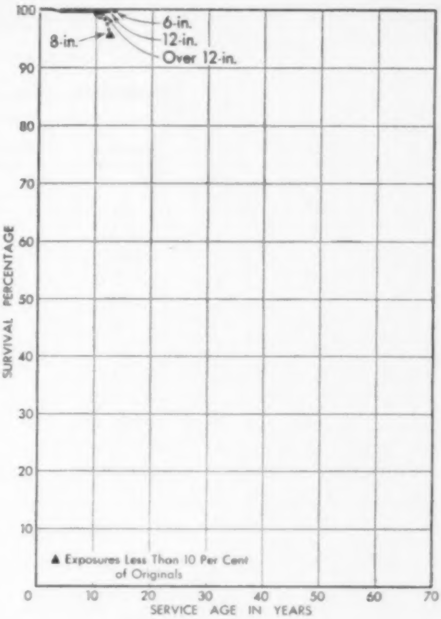


Fig. 2. Mortality Survival Curve—6–24-in. Cast-Iron Cement-Lined Mains—Rochester (Suburban), New York

Base: Feet	Survival: 1927–1940	
Size	Exposures	Retirements
in.	*ft.*	*ft.*
6	72,973	6
8	26,208	502
12	8,778	0
Over 12	14,453	21

tric motor-driven high-lift pumps, installed in 1912, 1916 and 1929. The elevation of the high-lift pumps is 260 ft. above sea level.

The filter room houses 22 high-pressure sand filters and auxiliary purification equipment. Eight filters were installed in 1905, two in 1917, four in 1925, six in 1930 and the final two in 1931. There are also two deep well pumps, installed in 1928 and 1930, located in the intake well.

Purified water is discharged at from 225- to 240-psi. pressure from the filter effluent into two 20-in. cast-iron transmission mains. The original main, installed in 1904–1905, consists of 20-in. diameter pipe of Classes E to B. It carries water in a southeasterly direction to standpipes located on Cobb's Hill. The elevation of the overflow of these standpipes is 653 ft. From them water flows to the distribution system and through a third transmission main, 12 in. in diameter, installed in 1905, southeastwardly to the villages of East Rochester and Fairport.

The second transmission main, also 20 in. in diameter, installed in 1928, also carries water in the same general

TABLE 2

Summary of Valves

Rochester (Suburban), New York

Size, *in.*	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*
4	13	0	13	1905	25.8
6	513	2	511	1905	22.6
8	168	4	164	1905	25.0
10	5	0	5	1908	32.5
12	42	0	42	1905	19.0
16	4	0	4	1931	7.3
20	84	2	82	1905	22.2
24	1	0	1	1930	10.5
Total	830	8	822		22.9
Percentage of Total	100.00	0.96	99.04		

Mortality Survival Ratios

Size, *in.*	Number Installed	Period Covered, *yr.*	Percentage
4	13	35.5	100.000
6	513	35.5	98.659
8	168	35.5	97.402
10 and 12	47	35.5	100.000
Over 12	89	35.5	95.987
Total	830		

TABLE 3

Summary of Hydrants

Rochester (Suburban), New York

Size, *in.*	Kind	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*	Mortality Survival Percentage
4	Two 2½-in. nozzle	3	0	3	1931	9.5	
4	Two 2½-in. and steamer nozzle	571	21	550	1905	21.3	85.648
5	Two 2½-in. and steamer nozzle	212	24	188	1915	9.3	
Total		786	45	741		18.2	
Percentage of Total		100.00	5.73	94.27			

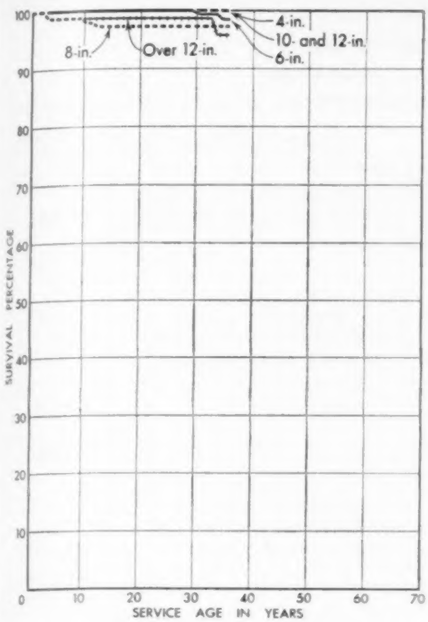


Fig. 3. Mortality Survival Curve—4–20-in. Valves—Rochester (Suburban), New York

Base: Unit	Survival: 1905–1940	
Size	Exposures	Retirements
in.	*Units*	*Units*
4	13	0
6	513	2
8	168	4
10 and 12	47	0
Over 12	89	2

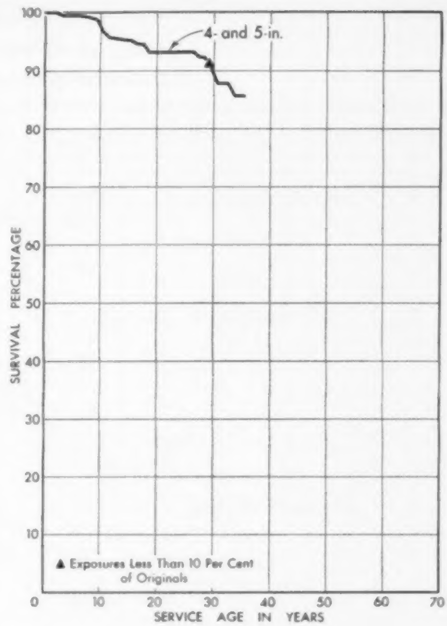


Fig. 4. Mortality Survival Curve—4- and 5-in. Hydrants—Rochester (Suburban), New York

Base: Units	Survival: 1905–1940	
Size	Exposures	Retirements
in.	*Units*	*Units*
4 and 5	786	45

direction to the standpipes on Cobb's Hill.

Distribution mains take off from the three transmission mains at various points along their lengths.

Pressures and adequate flows are maintained in the system by six booster stations, each consisting of a motor-driven pump and auxiliaries. These stations, and dates of construction, are as follows: Ridge Road (1917), Culver Road (1926), Pittsford (1928), Linden Road (1929), Echo Street (1931) and Cobb's Hill (1937).

The water storage facilities of the plant include a steel standpipe of 2.651-mil.gal. capacity, elevation of overflow 653 ft., built on Cobb's Hill in 1904; one steel standpipe at the same elevation with 5.891-mil.gal. capacity, erected in 1930 at Cobb's Hill; and an elevated steel tank of 0.2-mil.gal. capacity, erected in 1930 and located at Buffalo Road and the Barge Canal in the southwestern part of the city of Rochester.

Basis of Study

The data on pipe, valves and hydrants relating to their installation and retirement are stated to be complete from the beginning of the plant.

TABLE 4

CAUSES OF RETIREMENT OF MAINS
ROCHESTER (SUBURBAN), NEW YORK

Size, in.	Kind	Length, ft.	Life, yr.	Cause of Retirement	Salvaged, ft.
4	Cast-iron unlined	800	15.5	Replaced by 8-in. main	
		183	24.5	Salvaged and relocated	183
		983			183
6	Cast-iron unlined	544	2.5	Relocated	544
		460	19.5	Replaced by 8-in. main	—
		856	23.5	Replaced by 12-in. main	—
		11	30.5	Lowered	11
		450	34.5	Relocated	450
		2,321			1,005
8	Cast-iron unlined	22	3.5	Relocated	22
		120	24.5	Salvaged and lowered	120
		200	33.5	Relocated	200
		342			342
12	Cast-iron unlined	240	23.5	New bridge construction	—
		12	26.5	Lowered	12
		252			12
20	Cast-iron unlined	30	1.5	Relocated	30
		61	3.5	Lowered	61
		1,145	8.5	Relocated	1,145
		120	9.5		120
		464	21.5		464
		96	26.5	Lowered	96
		429	33.5	Relocated	429
		2,345			2,345
6	Cast-iron cement-lined	6	2.5	Relocated	6
		6			6
8	Cast-iron cement-lined	34	4.5	Relocated	34
		221	10.5		221
		29	11.5		29
		218	12.5		218
		502			502
16	Cast-iron cement-lined	21	3.5	Relocated	21
		21			21
	TOTAL	6,772			4,416

TABLE 5

CAUSES OF RETIREMENT OF VALVES
ROCHESTER (SUBURBAN), NEW YORK

Size, *in.*	Number	Life, *yr.*	Cause of Retirement	Number Salvaged
6	1	30.5	Pipe lowered	1
	1	34.5	Relocated	1
	2			2
8	2	3.5	Relocated	2
	1	10.5		1
	1	12.5		1
	4			4
20	1	3.5	Relocated	1
	1	33.5	Relocated	1
	2			2
TOTAL	8			8

Mortality Survival Study

Mortality studies were made of cast-iron mains, valves and hydrants. Table 1 gives a summary of the cast-iron pipe installed, retired and the amount remaining in service, as well as other pertinent data relating thereto. Figures 1 and 2 show the mortality survival curves covering the record of the pipe grouped as shown.

The summaries of valves and hydrants are given in Tables 2 and 3 and the applicable mortality survival curves in Figs. 3 and 4.

Causes of Retirement

The causes of retirement of cast-iron mains and valves are shown in Tables 4 and 5. No detailed causes of retirements of hydrants were available. The plant officials state as follows: "Majority of retirements were due to relocation or to damage by automobiles. In these cases hydrants were inspected, repaired and installed in a new location or reset at another location at some later date."

Acknowledgment

The collection and compilation of data pertaining to the Rochester plant were under the general supervision of E. L. Heyser, Chief Valuation Engineer of the New York Water Service Corporation.

Summary of Installations and Retirements
Rochester (Suburban), New York

Mains

4-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1905	2,310	2,310	0
1907	843	660	183
1910	3,608	2,808	800
1914	744	744	0
1917	32	32	0
1927	90	90	0
1929	5	5	0
1940	0	0	0
Total	7,632	6,649	983

Retirements by Years

Year Installed	Feet	Year
1907	183	1931
1910	800	1925

6-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1905	36,058	34,741	1,317
1906	11,247	11,247	0
1907	21,161	21,161	0
1908	5,777	5,777	0
1909	4,739	4,739	0
1910	3,315	3,315	0
1911	7,258	6,798	460
1912	4,634	4,634	0
1913	37,739	37,739	0
1914	8,628	8,628	0
1915	12,858	12,858	0
1916	5,364	5,364	0
1917	2,374	2,374	0
1919	120	120	0
1921	3,858	3,858	0
1922	2	2	0
1923	12	12	0
1924	5,732	5,732	0
1925	516	516	0
1926	3,096	3,096	0
1927	2,123	1,579	544
1928	3,383	3,383	0
1929	3	3	0
1940	0	0	0
Total	179,997	177,676	2,321

6-in. Cast-Iron Unlined Mains (contd.)

Retirements by Years

Year Installed	Feet	Year	Feet	Year	Feet	Year
1905	856	1928	11	1935	450	1939
1911	460	1930				
1927	544	1929				

8-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1905	37,574	37,374	200
1906	2,124	2,124	0
1907	23,658	23,538	120
1909	4,319	4,319	0
1911	971	971	0
1913	52,860	52,860	0
1914	1,080	1,080	0
1915	4,250	4,250	0
1916	3,504	3,504	0
1919	1,800	1,800	0
1920	1,924	1,924	0
1921	2	2	0
1924	1,207	1,207	0
1925	2,229	2,229	0
1926	5,580	5,580	0
1927	9,172	9,172	0
1928	407	407	0
1929	15	15	0
1930	16	16	0
1934	27	5	22
1937	10	10	0
1940	0	0	0
Total	152,729	152,387	342

Retirements by Years

Year Installed	Feet	Year
1905	200	1938
1907	120	1931
1934	22	1937

10-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1908	4,800	4,800	0
1940	0	0	0
Total	4,800	4,800	0

12-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1905	36,628	36,376	252
1909	3,677	3,677	0
1910	2,384	2,384	0
1924	38	38	0
1926	64	64	0
1927	144	144	0
1929	1,357	1,357	0
1930	40	40	0
1940	0	0	0
Total	44,332	44,080	252

Retirements by Years

Year Installed	Feet	Year	Feet	Year
1905	240	1928	12	1931

20-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1905	77,228	74,883	2,345
1906	168	168	0
1908	108	108	0
1913	1,352	1,352	0
1914	259	259	0
1917	419	419	0
1925	107	107	0
1926	574	574	0
1928	59,455	59,455	0
1930	120	120	0
1938	130	130	0
1940	0	0	0
Total	139,920	137,575	2,345

Retirements by Years

Year Installed	Feet	Year	Feet	Year	Feet	Year
1905	30	1906	61	1908	1,145	1913
	120	1914	464	1926	96	1931
	429	1938				

24-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1926	294	294	0
1940	0	0	0
Total	294	294	0

6-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1927	14,865	14,865	0
1928	9,137	9,137	0
1929	15,897	15,897	0
1930	6,089	6,089	0
1931	5,984	5,984	0
1932	42	42	0
1933	3,164	3,164	0
1934	774	774	0
1935	280	280	0
1936	465	465	0
1937	3,056	3,050	6
1938	1,750	1,750	0
1939	5,908	5,908	0
1940	5,562	5,562	0
Total	72,973	72,967	6

Retirements by Years

Year Installed	Feet	Year
1937	6	1939

8-in. Cast-Iron Cement-Lined Mains

Year Installed	Installed	In Service	Retired
1927	2,003	1,974	29
1928	7,123	6,684	439
1929	5,902	5,902	0
1930	4,216	4,216	0
1931	33	33	0
1934	61	27	34
1936	4,430	4,430	0
1937	2,206	2,206	0
1938	234	234	0
1940	0	0	0
Total	26,208	25,706	502

Retirements by Years

Year Installed	Feet	Year	Feet	Year
1927	29	1938		
1928	221	1938	218	1940
1934	34	1938		

12-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1928	2,455	2,455	0
1929	3,271	3,271	0
1930	354	354	0
1931	152	152	0
1932	2,482	2,482	0
1933	3	3	0
1937	61	61	0
1940	0	0	0
Total	8,778	8,778	0

16-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1931	233	233	0
1934	3,236	3,215	21
1937	12	12	0
1940	0	0	0
Total	3,481	3,460	21

Retirements by Years

Year Installed	Feet	Year
1934	21	1937

20-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1930	5,868	5,868	0
1931	251	251	0
1934	10	10	0
1938	313	313	0
1940	0	0	0
Total	6,442	6,442	0

24-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1930	4,530	4,530	0
1940	0	0	0
Total	4,530	4,530	0

20-in. Steel Mains

Year	Feet		
Installed	Installed	In Service	Retired
1928	528	528	0
1940	0	0	0
Total	528	528	0

VALVES

4-in. Valves

Year	Number		
Installed	Installed	In Service	Retired
1905	3	3	0
1908	1	1	0
1910	3	3	0
1914	2	2	0
1917	3	3	0
1929	1	1	0
1940	0	0	0
Total	13	13	0

6-in. Valves

Year	Number		
Installed	Installed	In Service	Retired
1905	121	119	2
1906	8	8	0
1907	26	26	0
1908	8	8	0
1909	9	9	0
1910	5	5	0
1911	11	11	0
1912	10	10	0
1913	37	37	0

6-in. Valves (contd.)

Year Installed	Number Installed	In Service	Retired
1914	15	15	0
1915	18	18	0
1916	8	8	0
1917	14	14	0
1919	2	2	0
1921	7	7	0
1922	4	4	0
1923	3	3	0
1925	2	2	0
1926	7	7	0
1927	40	40	0
1928	41	41	0
1929	32	32	0
1930	8	8	0
1931	48	48	0
1932	1	1	0
1933	3	3	0
1934	1	1	0
1935	1	1	0
1936	1	1	0
1937	7	7	0
1938	5	5	0
1939	6	6	0
1940	4	4	0
Total	513	511	2

Retirements by Years

Year Installed	Number	Year	Number	Year
1905	1	1935	1	1939

8-in. Valves

Year Installed	Number Installed	In Service	Retired
1905	55	55	0
1906	1	1	0
1907	10	10	0
1909	3	3	0
1911	2	2	0
1913	29	29	0
1914	2	2	0
1915	2	2	0
1916	5	5	0
1919	1	1	0
1920	2	2	0
1924	3	3	0
1925	2	2	0
1926	5	5	0
1927	3	3	0
1928	13	11	2
1929	3	3	0

8-in. Valves (contd.)

Year Installed	Number Installed	In Service	Retired
1930	5	5	0
1931	5	5	0
1934	7	5	2
1936	6	6	0
1937	2	2	0
1938	2	2	0
1940	0	0	0
Total	168	164	4

Retirements by Years

Year Installed	Number	Year	Number	Year
1928	1	1938	1	1940
1934	2	1937		

10-in. Valves

Year Installed	Number Installed	In Service	Retired
1908	5	5	0
1940	0	0	0
Total	5	5	0

12-in. Valves

Year Installed	Number Installed	In Service	Retired
1905	9	9	0
1909	2	2	0
1910	4	4	0
1926	3	3	0
1927	2	2	0
1928	3	3	0
1929	8	8	0
1930	5	5	0
1932	3	3	0
1933	1	1	0
1937	2	2	0
1940	0	0	0
Total	42	42	0

16-in. Valves

Year Installed	Number Installed	In Service	Retired
1931	1	1	0
1934	3	3	0
1940	0	0	0
Total	4	4	0

20-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1905	36	34	2
1908	3	3	0
1917	2	2	0
1925	1	1	0
1926	3	3	0
1928	26	26	0
1930	4	4	0
1931	3	3	0
1934	1	1	0
1938	4	4	0
1940	1	1	0
Total	84	82	2

20-in. Valves (contd.)

Retirements by Years

Year Installed	Number	Year	Number	Year
1905	1	1908	1	1938

24-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1930	1	1	0
1940	0	0	0
Total	1	1	0

HYDRANTS

4-in. Hydrants—4-in. Valve, 6-in. Connection, Two Hose Nozzles

Year Installed	Number Installed	Number In Service	Number Retired
1931	3	3	0
1940	0	0	0
Total	3	3	0

4-in. Hydrants—4-in. Valve, 6-in. Connection, Two Hose and One Steamer Nozzle

Year Installed	Number Installed	Number In Service	Number Retired
1905	22	20	2
1906	7	7	0
1907	12	11	1
1908	8	7	1
1909	4	4	0
1910	7	7	0
1911	8	8	0
1912	34	33	1
1913	2	2	0
1914	27	27	0
1915	73	73	0
1916	40	40	0
1917	7	7	0
1919	29	23	6
1920	25	24	1
1921	36	36	0
1922	6	6	0
1923	11	11	0
1924	104	100	4
1925	33	31	2
1926	17	17	0

4-in. Hydrants—4-in. Valve, 6-in. Connection, Two Hose and One Steamer Nozzle (contd.)

Year Installed	Number Installed	Number In Service	Number Retired
1927	24	23	1
1928	7	6	1
1929	1	1	0
1930	2	2	0
1931	1	1	0
1933	1	1	0
1934	2	2	0
1935	1	1	0
1936	2	2	0
1937	4	3	1
1938	3	3	0
1939	7	7	0
1940	4	4	0
Subtotal	571	550	21
Unknown	9	0	9
Total	580	550	30

Retirements by Years

Year Installed	Number	Year	Number	Year
1905	2	1935		
1907	1	1940		
1908	1	1937		
1912	1	1939		
1919	1	1931	5	1937
1920	1	1931		
1924	1	1938	3	1940
1925	1	1936	1	1938
1927	1	1938		
1928	1	1939		
1937	1	1940		

5-IN. HYDRANTS—5-IN. VALVE, 6-IN. CONNECTION, TWO HOSE AND ONE STEAMER NOZZLE

Year Installed	*Number Installed*	*Number In Service*	*Number Retired*
1915	1	1	0
1927	5	5	0
1928	53	45	8
1929	32	22	10
1930	35	33	2
1931	45	41	4
1933	4	4	0
1935	1	1	0
1936	3	3	0
1937	2	2	0
1938	13	13	0
1939	4	4	0
1940	14	14	0
TOTAL	212	188	24

Retirements by Years

Year Installed	*Number*	*Year*	*Number*	*Year*	*Number*	*Year*
1928	1	1931	6	1938	1	1939
1929	10	1939				
1930	2	1939				
1931	1	1936	2	1938	1	1939

Syracuse (Suburban), New York—Survival and Retirement Experience With Water Works Facilities

As of December 31, 1940

THE Syracuse plant of the New York Water Service Corporation provides water service to an area suburban to the city of Syracuse, including parts of the towns of Marcellus, Camillus, Geddes, Salina, DeWitt, Manlius, Clay and Cicero and excluding the villages of Marcellus, East Syracuse, Solvay, Liverpool, Minoa and separate water districts within the above mentioned towns. It also furnishes standby service within the corporate limits of the city of Syracuse with provision that the water should be used solely in cases of emergency. The company also sells water at wholesale rates for redistribution to water districts, including Camillus, Split Rock, Gulf, West Genessee Park, Fairmont, Syracuse Gardens, City View and Cicero and the incorporated villages of Liverpool, Solvay and Minoa. All service is rendered through meters.

The service area is chiefly residential and typical suburban territory surrounding Syracuse in Onondaga County in the central part of New York State. Some large industries are located in the area served.

At the date of the study the company had in service approximately 87.5 mi. of pipelines, including 416 valves and 275 fire hydrants. During 1940 the company furnished 6.3 mgd. to 2,816 customers, including ten water districts and nine large industries. Of the 6.3 mgd. approximately 5.0 mgd. was furnished to the large industries, which include the New York Central Railroad, Marcellus & Otisco Railroad Company and Solvay Process Company. The remaining 1.33 mgd. was used in the area and by the ten water districts which have a population of 29,000. This is equivalent to about 46 gpd. per capita.

Development of the Existing System

The original service in the territory was furnished by the Onondaga County Suburban Water Company, incorporated in April 1907. On Nov. 1, 1907, the name was changed to Syracuse Suburban Water Company. Plant construction started shortly after the first of 1908 and the first sale of water was in June 1909.

On Nov. 30, 1926, the property was acquired by the New York Water Service Corporation, a member of the Federal Water Service Company, and the name of the company was changed to the Onondaga Water Service Corporation. On May 7, 1929, the property was merged with and became the Syracuse plant of the New York Water Service Corporation.

The company's source of water supply is Lake Otisco, located in the town of Marcellus, Onondaga County, some 18 mi. southwest of Syracuse. The lake is owned by the state of New York

TABLE 1

SUMMARY OF MAINS

SYRACUSE (SUBURBAN), NEW YORK

Size, in.	Kind	No. of Feet Installed	Percentage of Total	No. of Feet Retired	Percentage of Total	No. of Feet in Service	Percentage of Total	Year of First Installation	Average Age, yr.
4	Cast-iron unlined	1,860	0.4	0	0.0	1,860	0.4	1910	17.8
6		35,838	7.8	50	0.4	35,788	8.1	1910	18.4
8		26,480	5.8	239	1.9	26,241	5.9	1910	26.5
10		2,023	0.5	0	0	2,023	0.5	1910	30.5
12		15,573	3.4	146	1.2	15,427	3.5	1910	28.9
16		55,603	12.2	11,655	94.4	43,948	9.9	1910	28.6
20		77,904	17.1	17	0.1	77,887	17.5	1910	30.4
24		87,770	19.2	18	0.1	87,752	19.7	1910	15.0
6	Cast-iron cement-lined	98,861	21.6	82	0.7	98,779	22.2	1928	9.5
8		23,307	5.1	7	0.1	23,300	5.2	1928	10.1
12		31,558	6.9	135	1.1	31,423	7.1	1929	10.5
10	Galvanized wrought-iron	105	0.0	0	0.0	105	0.0	1910	30.5
TOTAL		456,882	100.0	12,349	100.0	444,533	100.0		18.8
Percentage of Total		100.00		2.70		97.03			
Average Size, *in.*		13.9		15.7		13.9			

Mortality Survival Ratios

Size, *in.*	Kind	No. of Feet	Period Covered *yr.*	Percentage
4	Cast-iron unlined	1,860	30.5	100.000
6		35,838	30.5	99.460
8		26,480	30.5	99.097
10 and 12		17,596	30.5	99.110
Over 12		221,277	30.5	92.114
6	Cast-iron cement-lined	98,861	12.5	99.894
8		23,307	12.5	99.970
12		31,558	11.5	99.569
10	Galvanized wrought-iron	105	30.5	100.000
	TOTAL	456,882		

but the flood rights around it are owned by the company. The legislature, in 1907, granted the Onondaga County Suburban Water Company the right to construct and maintain a dam, intake pipe and accessories necessary to impound an additional supply of water in Otisco Lake for the purpose of supplying pure and wholesome water to municipalities under certain restrictions and conditions.

Besides protecting the state against all claims and demands of riparian owners on Lake Otisco, which required the securing of the riparian rights along the shores and the outlet of the lake, the

TABLE 2

SUMMARY OF VALVES
SYRACUSE (SUBURBAN), NEW YORK

Size, *in.*	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*
4	7	0	7	1910	24.9
6	244	6	238	1910	17.2
8	57	4	53	1910	20.5
10	1	0	1	1910	30.5
12	38	0	38	1910	17.1
16	32	4	28	1910	17.7
20	31	0	31	1910	28.5
24	21	0	21	1910	13.2
TOTAL	431	14	417		18.4
Percentage of Total	100.00	3.25	96.75		

Mortality Survival Ratios

Size, *in.*	Number	Period Covered, *yr.*	Percentage
4	7	30.5	100.000
6	244	30.5	93.527
8	57	30.5	86.667
10 and 12	39	30.5	100.000
Over 12	84	30.5	91.400
TOTAL	431		

TABLE 3

SUMMARY OF HYDRANTS
SYRACUSE (SUBURBAN), NEW YORK

Size, *in.*	Number Installed	Number Retired	Number in Service	Year of First Installation	Average Age, *yr.*	Mortality Survival Percentage
4	34	6	28	1910	23.9	73.690
5	219	4	215	1927	9.6	97.873
TOTAL	253	10	243		11.3	
Percentage of Total	100.00	3.95	96.05			

company was required to furnish water to the Fair Grounds of the State Fair Commission.

This act gave the company the right to impound for and withdraw 5 mgd. from the lake. In 1922 the company received permission to take 11 mgd. In 1909 the company built a masonry dam and earthen embankment 127 ft. long and 21.5 ft. high, with the spillway 786.6 ft. above sea level.

Water is taken from Otisco Lake

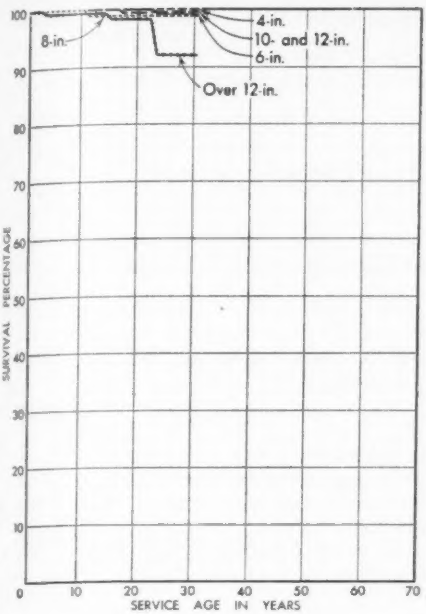


FIG. 1. Mortality Survival Curve—4–24-in. Cast-Iron Unlined Mains—Syracuse (Suburban), New York

BASE: Feet	SURVIVAL: 1910–1940	
SIZE	EXPOSURES	RETIREMENTS
in.	*ft.*	*ft.*
4	1,860	0
6	35,838	50
8	26,480	239
10 and 12	17,596	148
Over 12	221,277	11,690

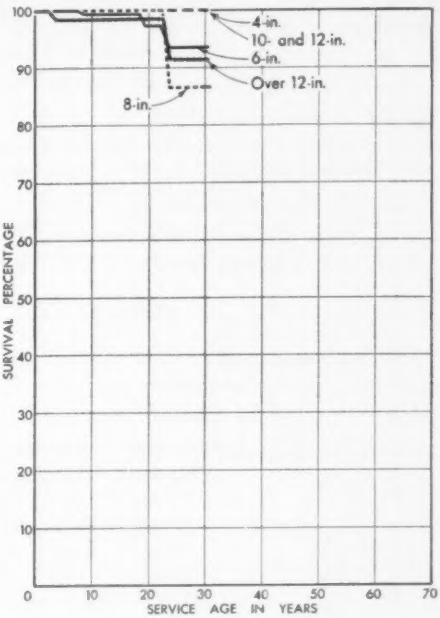


FIG. 2. Mortality Survival Curve—4–24-in. Valves—Syracuse (Suburban), New York

BASE: Unit	SURVIVAL: 1910–1940	
SIZE	EXPOSURES	RETIREMENTS
in.	*Units*	*Units*
4	7	0
6	244	6
8	57	4
10 and 12	39	0
Over 12	84	4

through a timber crib located approximately 6,200 ft. south of the dam with which it is connected by 6,174 ft. of 24-in. diameter, Class A cast-iron pipe. The intake is located about 18 ft. below the surface of the lake. Up to approximately 8.3 mgd. can flow through the transmission mains by gravity and when the daily draft exceeds this amount pumping is required.

The primary pumping station is located in the town of Marcellus just below the dam. It consists of a one-story building with substructure, 22 ft. deep, housing one 6,000 gpm., 150-hp. motor-driven centrifugal pump and a similar 7,000-gpm. pump driven by a 150-hp. gasoline engine.

Auxiliary booster pumping facilities are located in a building known as the Wolf Street Booster Station situated some 1,000 ft. northeast of the northeast corporate limits of Syracuse. The pump room contains a centrifugal pump of 2,800-gpm. capacity driven by a 100-hp. electric motor which is used to increase the delivery and pressure to the territory lying north and east of the booster station.

TABLE 4

Causes of Retirements of Mains

Size, *in.*	Kind	Length, *ft.*	Life, *yr.*	Cause of Retirement	Salvage, *ft.*
6	Cast-iron unlined	50	23.5	Blowoff on abandoned 16-in. main	—
		50			0
8	Cast-iron unlined	239	11.5	Flanged pipe canal crossing, canal filled in	239
		239			239
12	Cast-iron unlined	62	17.5	Replaced by 16-in. main and booster pump connection	52
		62			52
16	Cast-iron unlined	708	3.5	Relocated because of new railroad tracks	—
		1,581	15.5	Laid in fill, abandoned because of leaks	—
		100	18.5	Relocated because of sewer construction	100
		39	19.5	Cut-in of 16-in. valve	39
		9,227	23.5	Not needed after 24-in. main laid; 7,259 ft. abandoned under 20-ft. railroad fill	1,968
		11,655			2,107
20	Cast-iron unlined	10	3.5	Cut-in of valve	—
		7	27.5	Cut-in of valve	5
		17			5
24	Cast-iron unlined	18	19.5	Cut-in of valve	—
		18			0
6	Cast-iron cement-lined	16	8.5	Blowoff on abandoned 12-in. creek crossing	0
		66	9.5	Relocated because of sewer construction	66
		82			66
8	Cast-iron cement-lined	7	1.5	Cross cut-in	—
		7			0
12	Cast-iron cement-lined	9	1.5	Cut-in of valve	6
		126	8.5	Bridge construction	—
		135			6
12	Ward	84	23.5	Connection with 12-in. main abandoned	—
		84			0
	Total	12,349			2,475

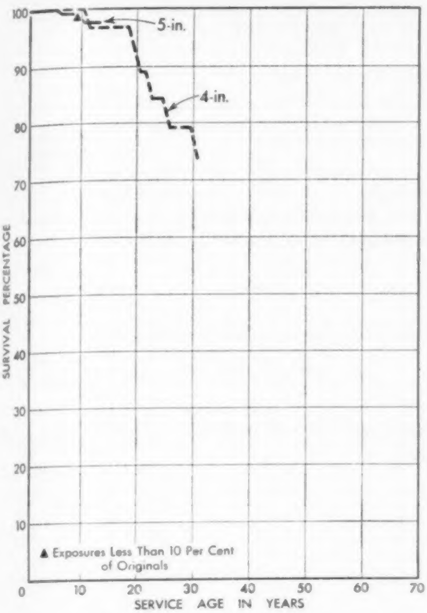


FIG. 3. Mortality Survival Curve—4- and 5-in. Hydrants—Syracuse (Suburban), New York

BASE: Unit	SURVIVAL: 1910–1940	
SIZE	EXPOSURES	RETIREMENTS
in.	*Units*	*Units*
4	34	6
5	219	4

Water is delivered from Lake Otisco through the original transmission main, constructed in 1908–1909, of 12-, 16-, 20- and 24-in. cast-iron pipe to the various districts, towns and villages served. In 1928–1929 the original line was paralleled with 87,752 ft. of 24-in. Class B cast-iron pipe, and interconnected at four points.

Water is treated with liquid chlorine and ammonium sulfate fed at the gate and chemical house at Lake Otisco.

Water storage facilities in the distribution system include an earth embankment reservoir located in the town of Camillus, known as Fairmont Reservoir. It is 265 ft. in diameter and has a capacity of 5 mil.gal. It was constructed in 1909 with a water surface elevation of 609. There is also an elevated steel tank, constructed in 1930. It is 40 ft. in diameter and 20 ft. high, with a capacity of 0.25 mil.gal. and overflow of elevation of 555 ft.

Basis of Study

The records of the system pertaining to the transmission and distribution mains, valves and hydrants are stated to be complete from the date of installation in 1910.

Mortality Survival Study

Mortality studies were made of cast-iron mains, valves and hydrants. Table 1 is a summary of the pipe installed, retired and the amount remaining in service, together with other pertinent data. Figure 1 shows the mortality survival curves covering the record of the amount and sizes of pipe grouped as shown.

Tables 2 and 3 are similar summaries of valves and hydrants, with Figs. 2 and 3 representing the applicable mortality survival curves.

Causes of Retirement

The causes of retirement of mains, valves and hydrants are given in Tables 4, 5 and 6.

Acknowledgment

The collection and compilation of data pertaining to the Syracuse Plant were under the general supervision of E. L. Heyser, Chief Valuation Engineer of the New York Water Service Corporation.

TABLE 5

CAUSES OF RETIREMENT OF VALVES
SYRACUSE (SUBURBAN), NEW YORK

Size, *in.*	Number	Life, *yr.*	Cause of Retirement	Number Salvaged
6	1	8.5	Blowoff abandoned	–
	2	9.5	Pipe replaced and blowoff abandoned	1
	3	23.5	Blowoff on abandoned 16-in. main	–
	6			1
8	4	23.5	Retired in connection with retirement of 16-in. main	–
	4			0
16	1	3.5	Relocated because of new railroad	1
	3	23.5	Line abandoned	3
	4			4
TOTAL	14			5

TABLE 6

CAUSES OF RETIREMENT OF HYDRANTS
SYRACUSE (SUBURBAN), NEW YORK

Size, *in.*	Number	Life, *yr.*	Cause of Retirement	Salvage
4	1	11.5	No record	0
	1	19.5	Damaged by auto	0
	1	20.5	Removed	1
	1	22.5	Removed	1
	1	25.5	Replaced at different location	1
	1	30.5	Hydrant no longer wanted	1
	6			4
5	1	6.5	Hydrant no longer wanted	1
	1	9.5	Removed because of sewer construction	1
	2	10.5	One private, no longer wanted One damaged by auto, damages collected	0
	4			3
TOTAL	10			7

Summary of Installations and Retirements
Syracuse (Suburban), New York

Mains

4-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1910	38	38	0
1923	1,822	1,822	0
1940	0	0	0
Total	1,860	1,860	0

6-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1910	8,902	8,852	50
1912	362	362	0
1918	31	31	0
1920	533	533	0
1921	929	929	0
1925	4,764	4,764	0
1926	2,009	2,009	0
1927	17,897	17,897	0
1929	411	411	0
1940	0	0	0
Total	35,838	35,788	50

Retirements by Years

Year Installed	Feet	Year
1910	50	1933

8-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1910	14,368	14,129	239
1912	606	606	0
1915	6,137	6,137	0
1918	118	118	0
1920	695	695	0
1921	239	239	0
1923	2,802	2,802	0
1927	1,503	1,503	0
1929	12	12	0
1940	0	0	0
Total	26,480	26,241	239

8-in. Cast-Iron Unlined Mains (contd.)

Retirements by Years

Year Installed	Feet	Year
1910	239	1921

10-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1910	2,023	2,023	0
1940	0	0	0
Total	2,023	2,023	0

12-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1910	12,257	12,173	84
1912	2,097	2,035	62
1927	1,219	1,219	0
1940	0	0	0
Total	15,573	15,427	146

Retirements by Years

Year Installed	Feet	Year
1910	84	1933
1912	62	1929

16-in. Cast-Iron Unlined Mains

Year Installed	Feet Installed	Feet In Service	Feet Retired
1910	50,711	39,056	11,655
1913	772	772	0
1916	20	20	0
1925	1,620	1,620	0
1928	105	105	0
1929	467	467	0
1933	1,908	1,908	0
1940	0	0	0
Total	55,603	43,948	11,655

16-in. Cast-Iron Unlined Mains (contd.)

Retirements by Years

Year Installed	Feet	Year	Feet	Year	Feet	Year
1910	708	1913	1,581	1925	100	1928
	39	1929	9,227	1933		

20-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1910	77,311	77,294	17
1913	308	308	0
1929	279	279	0
1936	6	6	0
1940	0	0	0
Total	77,904	77,887	17

Retirements by Years

Year Installed	Feet	Year	Feet	Year
1910	10	1913	7	1937

24-in. Cast-Iron Unlined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1910	15,997	15,979	18
1929	71,735	71,735	0
1931	38	38	0
1940	0	0	0
Total	87,770	87,752	18

Retirements by Years

Year Installed	Feet	Year
1910	18	1929

6-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1928	8,477	8,477	0
1929	18,911	18,911	0
1930	47,910	47,828	82
1931	2,028	2,028	0
1934	4,429	4,429	0
1935	6,539	6,539	0
1936	2,837	2,837	0
1937	4,966	4,966	0
1939	1,109	1,109	0
1940	1,655	1,655	0
Total	98,861	98,779	82

6-in. Cast-Iron Cement-Lined Mains (contd.)

Retirements by Years

Year Installed	Feet	Year	Feet	Year
1930	16	1938	66	1939

8-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1928	5,712	5,712	0
1930	14,795	14,795	0
1931	31	31	0
1934	103	103	0
1936	1,023	1,023	0
1939	1,643	1,636	7
1940	0	0	0
Total	23,307	23,300	7

Retirements by Years

Year Installed	Feet	Year
1939	7	1940

12-in. Cast-Iron Cement-Lined Mains

Year	Feet		
Installed	Installed	In Service	Retired
1929	1,297	1,297	0
1930	30,073	29,938	135
1931	9	9	0
1933	37	37	0
1937	142	142	0
1940	0	0	0
Total	31,558	31,423	135

Retirements by Years

Year Installed	Feet	Year	Feet	Year
1930	9	1931	126	1938

10-in. Galvanized Wrought-Iron Mains

Year	Feet		
Installed	Installed	In Service	Retired
1910	105	105	0
1940	0	0	0
Total	105	105	0

VALVES

4-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	4	4	0
1923	3	3	0
1940	0	0	0
Total	7	7	0

6-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	80	75	5
1912	1	1	0
1918	2	2	0
1920	1	1	0
1921	1	1	0
1925	3	3	0
1926	3	3	0
1927	24	24	0
1928	8	8	0
1929	33	33	0
1930	65	64	1
1931	7	7	0
1934	3	3	0
1935	1	1	0
1936	2	2	0
1937	7	7	0
1939	1	1	0
1940	2	2	0
Total	244	238	6

Retirements by Years

Year Installed	Number	Year	Number	Year
1910	2	1929	3	1933
1930	1	1938		

8-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	25	21	4
1912	3	3	0

8-in. Valves (contd.)

Year Installed	Number Installed	Number In Service	Number Retired
1915	2	2	0
1921	1	1	0
1923	2	2	0
1927	2	2	0
1928	4	4	0
1929	2	2	0
1930	14	14	0
1934	1	1	0
1939	1	1	0
1940	0	0	0
Total	57	53	4

Retirements by Years

Year Installed	Number	Year
1910	4	1933

10-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	1	1	0
1940	0	0	0
Total	1	1	0

12-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	10	10	0
1912	1	1	0
1916	1	1	0
1925	2	2	0
1927	1	1	0
1929	7	7	0
1930	15	15	0
1931	1	1	0
1940	0	0	0
Total	38	38	0

16-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	11	7	4
1913	3	3	0
1925	2	2	0
1929	13	13	0
1933	2	2	0
1936	1	1	0
1940	0	0	0
Total	32	28	4

Retirements by Years

Year Installed	Number	Year	Number	Year
1910	1	1913	3	1933

20-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	26	26	0
1913	2	2	0
1929	3	3	0
1940	0	0	0
Total	31	31	0

24-in. Valves

Year Installed	Number Installed	Number In Service	Number Retired
1910	2	2	0
1929	18	18	0
1931	1	1	0
1940	0	0	0
Total	21	21	0

Hydrants

4-in. Hydrants

Year Installed	Number Installed	Number In Service	Number Retired
1910	18	13	5
1912	1	1	0
1915	1	1	0
1917	1	1	0
1920	2	2	0
1921	3	3	0
1925	3	2	1
1926	3	3	0
1929	1	1	0
1932	1	1	0
1940	0	0	0
Total	34	28	6

Retirements by Years

Year Installed	Number	Year	Number	Year	Number	Year
1910	1	1929	1	1930	1	1932
	1	1935	1	1940		
1925	1	1936				

5-in. Hydrants

Year Installed	Number Installed	Number In Service	Number Retired
1927	3	3	0
1929	1	1	0
1930	180	177	3
1931	1	0	1
1932	1	1	0
1934	12	12	0
1935	4	4	0
1936	5	5	0
1937	5	5	0
1939	5	5	0
1940	2	2	0
Total	219	215	4

Retirements by Years

Year Installed	Number	Year	Number	Year
1930	1	1939	2	1940
1931	1	1937		

American Water Works Association

Tentative
STANDARD SPECIFICATIONS
for
SULFATE OF ALUMINA

These "Tentative Standard Specifications for Sulfate of Alumina" are based upon the best known experience and are intended for use under normal conditions. They are not designed for unqualified use under all conditions and the advisability of use of the material herein specified in any plant must be subjected to review by the engineer responsible for operation in the particular locality concerned.

Approved as Tentative by the Board of Directors of the A.W.W.A. on November 19, 1945

First Printing, December 1945

AMERICAN WATER WORKS ASSOCIATION
Incorporated
500 Fifth Avenue, New York 18, N.Y.

Preparation

With the removal of War Production Board restrictions, the Emergency Alternate Specifications for Sulfate of Alumina became obsolete. The officers of the Water Purification Committee have constituted themselves a committee to revise the specifications and have approved the following document to cover sulfate of alumina for water treatment purposes. The Committee on Water Works Practice has also approved these specifications.

The original A.W.W.A. Specifications for Sulfate of Alumina appeared in the Manual of Water Works Practice *under the general heading "Specifications for Chemicals Used in Water Purification." The Emergency Alternate Specifications for Sulfate of Alumina, adopted by the A.W.W.A. Board of Directors on June 25, 1942, were published in the 1942* JOURNAL, *page 1073.*

Tentative

Standard Specifications for Sulfate of Alumina

Section 1-1—Scope

These specifications for sulfate of alumina are promulgated for the use of purchasing agencies handling the procurement of material used in water treatment for public or general industrial supplies.

Section 1-2—Types

Two types of sulfate of alumina are described, as follows:

2.1—*Purified*—Sulfate of alumina from which the major portion of the insoluble material has been removed.

2.2—*Unpurified*—Sulfate of alumina from which only a minor part of the insoluble material has been removed.

Section 1-3—Basis for Purchase

The purchasing agency shall:

3.1—State the type of sulfate of alumina required.

3.2—Specify whether lump or ground sulfate of alumina is desired.

3.3—State the method of packaging or shipment desired.

Section 1-4—Size of Lumps or Grains

4.1—Lump sulfate of alumina shall range in size from not less than $\frac{3}{4}$ in. to not more than 3 in.

4.2—Ground sulfate of alumina for use in dry feeding machines shall be of such size that not less than 95 per cent shall pass a woven sieve having 10 meshes per linear inch and 100 per cent shall pass a sieve having 4 meshes per linear inch.

Section 1-5—Packing and Shipping

Sulfate of alumina may be ordered shipped:

5.1—In bulk.

5.2—In 100-lb. multi-wall paper bags.

5.3—In 200-lb. textile or burlap bags.

5.4—In 400-lb. barrels.

The net weight of bags or barrels shall not deviate from the recorded weight, plus or minus, by more than 2.5 per cent. Exception taken to the weight of material received shall be based on certified unit weight of not less than 10 per cent of the packages shipped and selected at random from the entire shipment.

Section 1-6—Sampling and Testing

6.1—The composition of the sulfate of alumina shall be determined by analyzing samples taken promptly upon the arrival of material at the point of consumption.

6.2—When sulfate of alumina is shipped in bulk, the sample shall be so taken that it will represent an average of all parts of the shipment from top to bottom, and shall not contain a disproportionate share of the top and bottom layers. It shall weigh at least 10 lb. and shall be crushed if necessary

and mixed thoroughly and "quartered" to provide two 1-lb. samples, one of which shall be used for the immediate testing. The other 1-lb. sample shall be kept carefully sealed for use in a possible retest as provided hereinafter.

6.3—When shipped in packages, at least 3 per cent of the number of packages shall be sampled. They shall be taken from various parts of the shipment, dumped, mixed and sampled as in the above paragraph.

6.4—Notice of dissatisfaction with a shipment based on these specifications must be in the hands of the consignor within ten days after the receipt of the shipment at point of destination. If the consignor desires a retest, he shall notify the consignee within five days of receipt of the notice of complaint. The duplicate sample shall then be forwarded for a retest to some laboratory agreed upon by both parties. This retest shall be made at the expense of the consignor and the results accepted as final.

Section 1-7—Chemical Requirements

7.1—The material shall be basic.* It shall contain not less than 17 per cent available water soluble alumina (Al_2O_3). It shall not contain more than 0.75 per cent iron (Fe_2O_3).

7.2—Insoluble matter shall not exceed:

7.2.1—*In purified sulfate of alumina*—0.5 per cent of material insoluble in distilled water.

7.2.2—*In unpurified sulfate of alumina*—10.0 per cent of material insoluble in distilled water.

---

* *Editor's Note:* The term "basic" means that the content of sulfuric acid as found shall be less than that theoretically required to combine with the alumina and iron present.

A.W.W.A.—1945

BECAUSE of the Office of Defense Transportation ruling that no nation-wide meetings be held during 1945, the annual convention of the A.W.W.A., scheduled to be held in St. Louis, Mo., May 7–11, 1945, was canceled. There was substituted a meeting of the Executive Committee in New York City on June 29–30, 1945, to transact the necessary official business connected with the transfer of the presidency of the Association from Samuel F. Newkirk Jr. to Leonard N. Thompson.

Based upon prior expressions of opinion by the members of the Board of Directors, the Executive Committee took formal action in four important categories:

1. Authorized the establishment of a Committee on Public Relations of the Water Works Industry.
2. Voted to continue participation in the work of the Committee on Water and Sewage Works Development.
3. Voted affiliation of the American Water Works Association as an *association* member of the Chamber of Commerce of the United States.
4. Voted support (*in part*) of the Spence Bill (H.R. 592) and its counterpart, the Barkley Bill (S.1037), both intended to promote federal interest in the control of stream pollution.

The special Committee on Public Relations of the Water Works Industry has as its Chairman E. L. Filby of Kansas City, Mo. Each section of the Association has at least one member on the committee—the larger sections, two members. This committee is a *survey* group with the definite task of considering and evaluating the various methods which can be used to promote the public's understanding of water supply as a public service as well as to increase the appreciation of the value of the services rendered by the men and women in the water works industry. Its creation evidences the opinion of the Association's officers and directors that, while water works executives and personnel have well established records for successful planning, construction and operation of water supply works, these executives, and the industry as a whole, have been too prone to let their good works speak for themselves. Suggestions have been made that the Association carry on a national program of institutional advertising; that it develop a series of informative motion pictures; that it prepare advertising copy for water works plants to run in their local newspapers; that it prepare brochures and leaflets for water works superintendents to distribute to their customers; that it set up a special field staff to aid local executives in their contacts with municipal authorities, etc. Filby and his committee have been asked to review these and other suggestions which have been made, all intended to establish a positive program for a better public understanding of the water works industry. They are to present a plan of recommended action to the A.W. W.A. Board at its January 1946 meeting. At that time the Board will authorize such program as it desires, set up such staff operations as appear to

be indicated and establish a permanent Public Relations Committee, if such a committee from the Association's membership seems desirable.

The Executive Committee reviewed the series of comments which had been made by the members of the Board of Directors in response to the question "Should the A.W.W.A. become an Association Member of the U.S. Chamber of Commerce?" It was noted that the Directors' opinion was strongly in favor of such affiliation. The Executive Committee therefore authorized A.W.W.A. membership in the U.S. Chamber of Commerce. The consensus of opinion of Board members and officers may be expressed as follows: Water works executives and local Chambers of Commerce work together to advance their home communities. Public water supply service of high order is essential to community advancement. The U.S. Chamber of Commerce gives national leadership to local Chambers of Commerce and the A.W.W.A. gives continental leadership to the water works industry. The co-operation which now exists at the local level should be promoted by cooperation at the national level. The A.W.W.A. will participate in the work of the U.S. Chamber of Commerce as it relates to community advancement and to the field of interest of the A.W.W.A. The A.W.W.A. will retain its complete freedom of attitude and policy with relation to economic and social questions upon which the U.S. Chamber of Commerce takes a recorded position, accepting such of these viewpoints as it sees fit and considering itself in nowise bound by those which it does not accept. This policy of association affiliation by the A.W.W.A. is accepted by the U.S. Chamber of Commerce.

Abel Wolman, Chairman of the A.W.W.A. Committee on National Water Policy, recommended limited endorsement of the Barkley (Senate) and Spence (House) Stream Pollution Control Bills. The Executive Committee accepted Wolman's recommendations and approved the Barkley-Spence Bills *except* in so far as they establish a permanent policy of federal grants-in-aid for the construction of sewage treatment works.

The A.W.W.A. therefore endorses the assignment of certain responsibilities and duties with relation to stream pollution control to the Sanitary Engineering Division of the U.S. Public Health Service; the preparation by it, and related federal agencies, of comprehensive plans for stream pollution control; and encouragement by the U.S.P.H.S. of co-operative activities by the various states looking toward pollution control. The A.W.W.A. endorses the portions of the bills which authorize the U.S.P.H.S. to make investigations of the water pollution problems in any state upon request of the state's health department and further authorizes the publication of reports and recommendations concerning these investigations by the U.S. P.H.S.

The A.W.W.A. also endorses the establishment of a Water Pollution Control Advisory Board within the U.S.P.H.S. to be appointed annually by the Surgeon General. (Under the terms of the bill this board will consist of the following five persons:—The Surgeon General, U.S.P.H.S., or a sanitary engineer officer designated by him, who shall serve as Chairman of the Board; the Chief of Engineers, U.S. Army, or a member of the Corps of Engineers designated by him; the

Director, U.S. Fish and Wildlife Service, or a representative designated by him; and two persons not officers or employees of the federal government. One such person shall be active in the field of sewage and industrial waste disposal and the other person shall have shown an active interest in the field of wildlife conservation.)

The A.W.W.A. *does not endorse* Secs. 5, 6 and 7 of the bill, which establish a permanent policy of federal grants-in-aid for states, municipalities, other public bodies and *persons* for the construction of sewage and waste treatment works.

The A.W.W.A. Executive Committee found itself provided with the formal record of prior approval by the A.W.W.A. Board of Directors of principles which guided it in considering the recommendations made to it by Dr. Wolman. The A.W.W.A. Board and its Executive Committee can consistently endorse the portions of the Barkley and the Spence bills in so far as they authorize the U.S.P.H.S. and its Water Pollution Control Advisory Board to take the lead nationally in the promotion of stream pollution abatement, but until such time as federal grants-in-aid are initiated as part of a national program of unemployment relief, the A.W.W.A. cannot support the portions of the Barkley and Spence bills which authorize grants-in-aid for sewage treatment works.

The Executive Committee received the report of the Secretary advising that:

1. The Directors had voted in favor of authorization for section secretaries to form an organization and to hold a meeting during each annual convention.

2. The Directors had adopted the amended form of Article VII of the By-Laws which covers section and division organization and allotment of funds.

3. The Directors had approved the memorandum entitled "Approved Uses of A.W.W.A. Funds Allocated to Sections."

The Executive Committee discussed the possible continuation of the work of the Committee on Water and Sewage Works Development. Chairman Wolman, for the Committee, reported the progress made by water and sewage works in planning postwar construction. The Committee noted that the Water and Sewage Works Manufacturers Association is willing to defray the cost of the inter-association activity. It was therefore agreed, *for the A.W.W.A.*, to continue the work of the Committee on Water and Sewage Works Development as long as the members of the committee (representing the four associations) feel that the work should be continued.

The Committee accepted the dates which had been agreed upon (May 6–10) for the 1946 Convention, to be held in St. Louis.

Samuel F. Newkirk referred to discussions by the members of the Committee on Honorary Membership which concerned a possible limit on the total number of Honorary Members of the A.W.W.A., or a limit on the number of persons who might be named as Honorary Members in any year. Mr. Newkirk agreed to review the practices of similar organizations and report to the Board at a later date.

Presentation of Awards

Honorary Membership—At the annual meeting of the Board of Directors, held in New York City, Jan. 15–16, 1945, the following men were elected to Honorary Membership:

Robert W. Angus, Professor Emeritus of Mechanical Engineering, University of Toronto; a member of the Association since 1917; recipient of the Fuller Award in 1942; distinguished as a teacher of engineering and as a leader among engineers within and beyond the boundaries of the Dominion of Canada.

The certificate presentation was made by Samuel F. Newkirk at the Canadian Section Meeting, Mar. 20, 1945.

George W. Booth, Chief Engineer, National Board of Fire Underwriters, New York, N.Y.; a member of the Association since 1924; characterized in his work by a great purpose—the protection of the public against fire loss, incidental to which water supply works in North America have been aided substantially.

Willard Chevalier, Vice-President, McGraw-Hill Publishing Company, publisher of *Business Week,* New York, N.Y.; a member of the Association since 1934; a Director of the Association in 1937–40; recipient of the Goodell Prize in 1934; America's leading interpreter of the engineering viewpoint in the field of commerce and industry.

Messrs. Booth and Chevalier received their certificates at the June meeting of the Executive Committee.

The John M. Diven Medal—The Executive Committee accepted the recommendation of the Diven Medal Award Committee that no award be made for the year 1944. The committee reasoned that, although there have been numerous examples of meritorious service being rendered, such services have been of a regional rather than a continental nature. The wartime demands for full-capacity service of members within their own fields of direct responsibility have prevented their carrying on such services as have previously been the basis of the Diven Medal Award.

The John M. Goodell Award—This award for the best paper published in the JOURNAL of the Association was presented at the Missouri Valley Section Meeting on October 29 to:

H. V. Pedersen for his paper entitled "Calcining Sludge From a Softening Plant," which appeared in the November 1944 issue of the JOURNAL. In this paper, the author, a water works superintendent in a medium-sized city, describes his experiments designed to recover and make use of the spent lime derived from water softening operations. The paper has merit not alone because it records a diligent attack upon an important subject, but also because it demonstrates the ability of a mentally alert water works executive to give effective attention to problems beyond his daily routine.

George M. Fuller Memorial Awards will be presented to the following members at the 1946 annual conference in St. Louis:

Section	*1944*	*1945*
California	George Charles Sopp	*
Canadian	†	Charles Jules Des Baillets
Cuban	*	*
Florida	Keith Roderick Chinn	Henry H. Hyman
Four States	Gustav Jaeger Requardt	‡
Illinois	†	Adolph Emil Anderson
Indiana	†	*
Kentucky-Tennessee	*	*
Michigan	†	Raymond Johns Faust
Minnesota	†	Otto Ellsworth Brownell
Missouri Valley	Earle Lytton Waterman	Otto S. Reynolds
Montana	†	*
New England	*	*
New Jersey	Percy Suydam Wilson	John Leonard Radcliffe
New York	†	*
North Carolina	*	James Wilford Kellogg
Ohio	†	*
Pacific Northwest	†	*
Rocky Mountain	Chester Arnold Truman	Henry Griffith Watson
Southeastern	†	*
Southwest	Thomas Lampkin Amiss	Robert Wolcott Harding
Virginia	Richard Messer	Charles Lucian Crockett
Western Pennsylvania	*	Charles Louis Fox
West Virginia	Harry Kenneth Gidley	Max K. Jones
Wisconsin	*	*

* No award given.
† Award presented at Milwaukee Conference.
‡ 1945 Meeting not yet held.

Additions to the above list may be made by sections which hold their 1946 meetings prior to the St. Louis Conference.

The Nicholas S. Hill Cup—This cup has been awarded annually since 1916 to the section making the largest gain in membership since the last convention of the A.W.W.A. Since there was no convention during 1945, the Executive Committee directed that the award for the year 1944–45 be based on the membership totals as of June 30, 1945. This year's winner was the Missouri Valley Section, whose point score was 32.2. Second and third respectively were the Virginia Section, with a point score of 25.5, and the Canadian Section, with a score of 23.4.

The Henshaw Cup—Since section meetings were subject to the same wartime travel limitations as the annual convention, no Henshaw Cup was awarded during 1945. Inasmuch as the sections which held Fall meetings during 1944 have made up their records looking toward the award in 1945, the scores they have made will carry over into 1946.

The Old Oaken Bucket—The award for top membership for the seventh successive time was won by the California Section. As of June 30, 1945, this section had a total membership of 655.

Papers Scheduled at Section Meetings

THERE follows a chronological listing of papers scheduled for presentation at 1945 Section Meetings. The dates of the Section Meetings from 1941–45 and locations for 1945 are given on page 1404. A record of membership totals at the time of, and attendance at, the meetings in 1941–45 is presented on page 1405. Section officers who were elected at meetings held during 1945 are listed on page 64 of this JOURNAL.

New York Section—January 17, 1945

Address	Arthur H. Motley
The Present Outlook	Arthur E. Gorman
Classification and Control of Maintenance	F. Rigdon Berry
Effects of the 1944 Hurricane on Water Works:	
Experiences in Nassau County	J. L. Barron
Comments From the Underwriters' Viewpoint	A. C. Hutson
Lessons To Be Learned	Reeves Newsom

Canadian Section—March 19–21, 1945

Address	R. P. Vivian
Address	*Mayor* R. H. Saunders
Address	Samuel F. Newkirk
Symposium—Distribution Systems for Small Communities:	
Design of the Distribution System	J. G. Powell
Operation and Maintenance of the Distribution System	E. E. W. Oke
Guided Discussion—Operational Problems in Distribution Systems	*Led by* J. W. Peart
Symposium—Underground Water Supplies:	
Location and Development of Underground Water Supplies:	
Gravel Wall Wells	T. L. McManamna
Rock Wells	E. F. Roberts
Maintenance and Operation of Underground Water Works Systems	V. A. McKillop
Guided Discussion—Problems of Underground Water Supplies	*Led by* H. S. Nicklin
Symposium—Water Purification:	
Filter Sand Washing Methods	J. C. Street and A. H. R. Thomas
Chlorination and Taste Control	N. J. Howard and H. P. Stockwell
Guided Discussion—Operating Problems in Water Treatment	*Led by* W. B. Redfern
Guided Discussion—Operation and Maintenance of Water Works Pumping Equipment	*Led by* R. W. Angus
Guided Discussion—The Sales Engineers' Viewpoints on Tendering for Water Works Equipment	*Led by* W. Storrie
Symposium—Water Works Administration:	
For Public Utility Administration	R. W. Strike
Discussion	*Led by* W. G. Case
For Council Administration	F. G. Gardiner
Discussion	*Led by* Alex. Bissett
Symposium—Postwar Planning:	
Activities of the Water and Sewage Works Development Committee	Harry E. Jordan
What Can We Learn From Britain's Postwar Employment Policy?	James I. Simpson
Planning in Ontario	A. E. K. Bunnell
Guided Discussion—Service Line Materials and Installation	*Led by* R. Harrison

Montana Section—April 13–14, 1945

Address of Welcome . . . . . . *Mayor* E. R. Roehl
Response . . . . . . Fred Palmer
Our Broadened Horizons . . . . . . Leonard N. Thompson
An Analysis of Montana's Stream Pollution Situation . . . . . . H. B. Foote
Current WPB Activities and Material and Manpower Situations . . . . . . G. E. Arnold
Water, Friend or Foe . . . . . . *A Motion Picture*
Montana's Revenue Bond Act . . . . . . Kenneth Chrysler
The Municipal Family . . . . . . Arthur Baker
Soil Corrosion of Buried Metals . . . . . . C. R. Davis
Substituting Horsepower for Manpower . . . . . . D. I. Grush

New York Section—Regional Meetings—May 22–25, 1945

In addition to the papers listed under the respective cities the following papers were presented at each of the Section's regional meetings:

New York State Mutual Aid Program . . . . . . Earl Devendorf
Manpower Savings in Water Works Operation . . . . . . Samuel F. Newkirk
Water Works Materials From the War Production Viewpoint . . . . . . Bayard F. Snow
Wartime Maintenance Problems . . . . . . Hugh S. Dewey and Harry M. Huy

Rochester—May 22, 1945

Reconditioning 70-Year-Old Abandoned Water Main . . . . . . Lewis B. Smith
Round Table Discussion—General Subjects . . . . . . *Led by* William H. Clark

Syracuse—May 23, 1945

Meeting Wartime Demands in Suburban Syracuse . . . . . . A. A. Korves
Round Table Discussion—General Subjects . . . . . . *Led by* Elon P. Stewart

Albany—May 24, 1945

System Maintenance . . . . . . Ernest L. H. Meyer
Round Table Discussion—General Subjects . . . . . . *Led by* William Luby

White Plains—May 25, 1945

Artificial Recharge of Ground Water . . . . . . R. M. Leggette
New York City's Water Supply to Outside Communities . . . . . . Tobias Hochlerner
Round Table Discussion—General Subjects . . . . . . *Led by* James C. Harding

Kentucky-Tennessee Section—June 4–5, 1945 *

Panel Discussion—Office and Distribution . . . . . . *Led by* E. E. Jacobson
Panel Discussion—Pumping . . . . . . *Led by* Clark Cramer
Panel Discussion—Purification . . . . . . *Led by* W. H. Lovejoy

---

* Kentucky Section only.

Indiana Section—Regional Meetings—June 12–22, 1945

In addition to the papers listed under the respective cities the following papers were presented at each of the Section's regional meetings:

Arithmetic of Water Supply	W. E. Howland
Bills Passed by Last Legislature Which Affect Public Water Supplies	Joseph L. Quinn
Report of Zone Developers	*Respective districts reporting*
Chlorine Handling	E. L. Gaudin, M. S. Clark and J. O. Logan
New Trends in Coagulation and Sedimentation	S. L. Tolman

North Vernon—June 12, 1945

Water Works Accounting in the Small Water Works	Everitt Robins
Cleaning and Cement Lining Water Pipe (*Illustrated by a motion picture*)	F. A. Schaefer

Evansville—June 13, 1945

Address of Welcome	*Mayor* Reichert
Address of Welcome	E. C. Henning
Meter Maintenance	Lawrence Spirer
Water Works Accounting	G. J. Laine
Policies Concerning Main Extensions	Mike Schmitt
Substitute Materials	M. H. Schwartz

Jasonville—June 14, 1945 *

Crawfordsville—June 15, 1945

Emergency First Aid	Ralph Young
Water Works Accounting	O. J. Stewart
Essentials of a Good Small Water Works	Thomas Burrin
Water Meter Maintenance	E. J. Good

Monticello—June 19, 1945

Address of Welcome	Roy Conrad
Water Purification by Ozonation	E. H. Ahlring
Meter Maintenance	C. A. Robbins
Avoidable Accidents	Jack Gordon
Water Works Accounting	Norman Seward
Essentials of a Good Small Water Works	Ralph Lomax
Policies Concerning Main Extensions	Floyd L. Kerns
Management in Wartime	F. I. Bridegroom

LaPorte—June 20, 1945

Address of Welcome	*Mayor* John Martin
First Aid	J. M. Falls
Meter Maintenance	A. R. Klein
Water Works Accounting	H. J. Draves
Construction Work (*Illustrated by a motion picture*)	Albert G. Vinick

---

* *General program only.*

Columbia City—June 21, 1945

Address of Welcome . . . . . *Mayor* James A. Brown
First Aid . . . . . W. H. Seifert
Maintenance of Meters . . . . . Ross Burns

Anderson—June 22, 1945

Address of Welcome . . . . . *Mayor* C. D. Rotruck
Chlorinator Maintenance . . . . . Paul Laux
Distribution Appliances . . . . . O. I. Williamson

New Jersey Section—Regional Meetings—July 25 and November 8–10, 1945

Monmouth County—July 25, 1945

Legislative Committee's Report on Licensing of Water Superintendents . . Richard E. Bonyun

Atlantic City—November 8–10, 1945

Study of Corrosion Control With Sodium Hexametaphosphate . . . . . P. A. Pallo
Discussion . . . . . Owen Rice
Graphitic Corrosion of Cast Iron As Experienced in Newark . . . . . L. M. Leedom
Legislative Committee's Report on Licensing of Water Superintendents . . Richard E. Bonyun
Relation of Geology to Water Supply Wells in New Jersey . . . . . Meredith E. Johnson
Symposium—Taste and Odor Removal Methods:
Break-Point Chlorination . . . . . Jos. Reid
Activated Carbon . . . . . John L. Radcliffe
Chlorine Dioxide Treatment . . . . . L. Newell
Water Situation in New Jersey As Affected by the Proposed New Jersey Ship Canal . . . . . H. T. Critchlow
Cross-Connection Policy of Water Works Service Company . . . . . John H. Murdoch Jr.
Question Box . . . . . *Directed by* Martin Flentje
Round Table Discussions . . . . . *Led by* E. Vernon Smith
Hydrant Painting
Valve Inspection
Labor Relations
Street Repairs
Storage Tank Maintenance

Minnesota Section—Regional Meetings—September 11–18, 1945

Mankato, Minnesota—September 11, 1945

Address of Welcome . . . . . *Mayor* C. K. Mayer
Response . . . . . Leonard N. Thompson
"Red Water," Its Cause and Cure . . . . . W. J. Bell

Fargo, North Dakota—September 14, 1945

Address of Welcome . . . . . *Mayor* F. F. Olsen
Response . . . . . A. M. Kircher
Water Softening at Fergus Falls . . . . . Howard J. Sowden
Future Improvements for Fargo . . . . . H. H. Behlmer
Predaceous Diving Beetles in Winnipeg's Water Supply . . . . . W. D. Hurst

Duluth, Minnesota—September 18, 1945

Address of Welcome . . . . . *Mayor* Johnson
Response . . . . . A. M. Kircher
Numerical Rating of Water Supplies . . . . . O. E. Brownell
Rural Water Supplies . . . . . Elmer C. Slagle
"Midwest" and the "Great Lakes Seaway" . . . . . T. W. Wahl

Western Pennsylvania Section—September 14, 1945

Symposium—Water Works Operating and Management Problems:
Baffling Sedimentation Basins . . . . . R. W. Hayden
Discussion . . . . . Wm. J. Murdoch
Problems in Bacteriology . . . . . Marie A. Murphy
Discussion . . . . . C. K. Calvert
Foremen Training an Important Step Towards Better Management-Employee Relations (*Illustrated by a motion picture*) . . . . . W. B. Simpson
Fundamental Laboratory Technic for Determining Ferric Sulfate Dosage . . . . . J. B. Nickel
An Unusual Problem of Corrosion . . . . . H. M. Olson
Symposium—Raw Water Quality As Affected by Pollution:
The Policies of the Pennsylvania Sanitary Water Board Regarding Stream Pollution . . . . . E. A. Holbrook
Pollution Control Program of the Pennsylvania Sanitary Water Board . . . . . J. R. Hoffert
Scope and Magnitude of Pollution in Western Pennsylvania . . . . . C. H. Young and L. S. Morgan
Raw Water Quality:
Allegheny River at Aspinwall . . . . . C. F. Drake
Monongahela River at Pittsburgh . . . . . F. W. Bouson
Shenango River at New Castle, Pa. . . . . . B. French Johnson
Ohio River at Wheeling, W.Va. . . . . . A. R. Todd

Michigan Section—September 19–20, 1945

Round Table Discussion—Super-chlorination . . . . . T. L. VanderVelde, Henry Gork, Lee Sensabaugh, Louis Harrison, J. E. Cooper, H. Keinath and C. H. Burdick
News From the Field . . . . . Raymond J. Faust
Geology in Relation to Ground Water Supplies . . . . . Norman Billings and John Ferris
Synthetic Resins . . . . . W. C. Bauman
Back-Siphonage and Cross-Connections . . . . . Andrew Dempster
Some Problems Connected With Electrical Pumping . . . . . Louis E. Ayres
pH-Alkalinity Nomographs . . . . . John Dye
Water May Be Dangerous . . . . . F. S. Leeder
Application of Chlorine Dioxide to Municipal Water Supplies . . . . . Harry Ward
Round Table Discussion—Inservice Training School:
Iron Bacteria, Chemistry of Iron in Water and Iron Removal . . . . . Harry McEntee
Fluorides and Dental Decay . . . . . W. L. Harris

Rocky Mountain Section—September 21, 1945

Address of Welcome . . . . . *Gov.* John H. Vivian
Response and Chairman's Address . . . . . K. E. Darling
Hard Water Tax . . . . . B. V. Howe
Discussion . . . . . Dana E. Kepner

Up to Date on Manpower and Materials and Postwar Water Works Planning....G. E. Arnold
Powers of Utility Commissions........................Ray L. Sherard and C. A. Lathrop
Threshold Limits on Corrosive Waters..............................John T. Franks
Laws on Formation of Sanitary Districts..........................Emory L. O'Connell
Discussion..Carroll Coberly
Round Table Discussion—How Water Works Improvements Affect Fire Insurance Rates....
Led by Mike Mulligan
Chlorine Dioxide in Treatment of Water Supplies....................Joseph A. McCarthy
Municipal Accounting...Paul Sandberg

Southwest Section—October 16–17, 1945

Address of Welcome...*Mayor* Sam S. Caldwell
Response...Albert H. Ullrich
Postwar and Future Planning of Association Activities...................Albert R. Davis
Business Management in the Operation of a Water Works Utility............Clyde E. Fant
Factors Involved in Underground Disposal of Fluids..........................Paul Weaver
Construction and Usage of Two 5-Mil. Gal. Concrete Storage Reservoirs As They Affect the Fort Worth System..............................W. S. Mahlie and Uel Stephens
Cross-Connections Service As an Added Feature to Distribution..............A. M. Smith
Some Thought Bombs...Edward R. Stapley
Water Problems in Expanded Industrial Chemical Plant......................A. P. Jones
Association Policies in General.................................Leonard N. Thompson
Public Relations in the Water Works Field...................................E. L. Filby
Electrical Terms and Maintenance of Electrical Equipment in the Water Plant...........
H. W. Blakeman
Experiences With Meter Practice Schools in Texas..........................W. A. Bandy
Meter Reading, Billing and General Commercial Practices Under Current Conditions......
K. F. Hoefle

California Section—October 23–25, 1945

Practical Instructions in Inspecting Water Works Materials...............H. Arthur Price
Practical Problems Involved in Employing Returned Servicemen..........John I. Hennessy
Detecting Illegitimate Uses of Water and Providing Service Guards Against This..........
William Stava
Water Conservation Through Recovery of Waste Water for Industrial Use..............
Wm. J. O'Connell
Aquatic Weed Control..R. F. Goudey
Water Treatment at Eureka.......................................Roy E. Coupal
The Economics of Treating Colorado River Waters...............James M. Montgomery
Boiler Water Quality and Treatment...............................K. W. Brown
Sand and Sedimentation Prevention...............................O. A. Gierlich
Electrolysis for the Layman.....................................Oliver C. Jessen
Symposium—A Look Into the Future..
Samuel B. Morris, L. W. Grayson, Roy E. Dodson and L. L. Camy

Ohio Section—October 23–26, 1945

Some Problems of Water Treatment From the Public Health Viewpoint.........E. S. Hoyt
Postwar Self Analysis...Wendell R. LaDue
Maintenance Problems...A. A. Ulrich
Operational and Management Problems.............................Ira M. Hoover

Missouri Valley Section—October 29–30, 1945

Address of Welcome .... *Mayor* John B. Gage
Response .... W. Victor Weir
Panel Discussion—Distribution System Problems ....
Mark E. Driftmier, H. H. Kansteiner and C. E. Schanze
Panel Discussion—State Health Board Interest in Water Works Problems ....
W. Scott Johnson, T. A. Filipi and Paul D. Haney
Panel Discussion—Procedures Affecting Public Relations in the Water Works Industry ......
J. J. Hail, Andrew J. Reiff, Robert S. Millar and I. H. Reed
Panel Discussion—New Horizons in the Water Works Industry:
Personnel and Management Problems .... H. V. Pedersen
Trends in Sterilization .... John A. Strang
Trends in Water Purification Practices .... Herbert O. Hartung

Illinois Section—October 30–31, 1945

Address of Welcome .... H. L. White
Functions of the State Health Department in the Water Works Industry ...... W. J. Downer
Guides and Checks to Good Operation .... Louis R. Howson
Discussion .... James Kerslake
Control of Dental Cavities (Caries) Through Feeding Sodium Fluoride in Public Water Supplies .... Horace R. Frye
Discussion .... Jerome C. Zufelt
Keeping Filters Clean .... Walter A. Peirce
Discussion .... James Myers
Discussion .... Chester Miller
Round Table Discussion—Taste and Odor Control .... *Led by* A. E. Anderson
Experiences in Break-Point Chlorination at Pontiac, Ill. .... James Murphy
Taste and Odor Control at Hammond, Ind. .... William J. Firth
Rehabilitation of Sandstone Wells .... J. B. Millis
Discussion .... Carl Duy
Discussion .... Edward Wilson
Recovering Well Capacity With Chlorine .... W. E. Huston and H. L. White
Problems of Sale of Water From One Municipality to Another
From the Standpoint of the Purchaser .... Andrew Frenzel
From the Standpoint of the Seller .... W. H. Weigel
Customer Accounting at Oak Park, Ill. .... Marshall Dutton
Bacteriological and Chemical Analyses in Plain English .... Eugene Clark
Discussion .... Chester Domke
Description of the Design, Construction and Operation of the New Chicago Water Purification Plant .... W. W. DeBerard, John Baylis and Fred Gordon

North Carolina Section—November 5–7, 1945

Address of Welcome .... *Mayor* H. H. Baxter
Cleaning of Cast-Iron Water Mains .... J. L. Greenlee
Plans for Developing the Division of Sanitary Engineering of the North Carolina State Board of Health .... J. M. Jarrett
Preliminary Work on Fluorescence of Drinking Waters as Evidence of Sewage Pollution .....
Ruth McLean
Preliminary Report on North Carolina Plan for Fluorine Investigation and Control in Water Supplies .... Lynn G. Maddry Sr.
Health and the Cycle of Water .... *A Motion Picture*
Modern Trends in the Sewage Works Field .... W. H. Wisely

Advantages of Cement Linings for Cast-Iron Pipe . . . . . Thomas F. Wolfe
Round Table Discussions:
  Water Works . . . . . *Led by* Robert E. Stiemke
  Sewerage . . . . . *Led by* S. R. Kin
Chlorination Terminology . . . . . A. E. Griffin
Co-operative Health and Sanitation in the Americas . . . . . Harold B. Gotaas
Round Table Discussions:
  Management of Small Town Water Works . . . . . *Led by* H. E. Thompson
  Sewage Works Operation . . . . . *Led by* D. York Brannock

Virginia Section—November 8–9, 1945

Public Works Planning . . . . . Jas. A. Anderson
Roanoke City Water Works . . . . . Louis R. Howson
Mutual Interest of the League of Virginia Municipalities and the Virginia Section, A.W.W.A. . . . . . I. G. Vass
Milestones Along the Road to Taste and Odor Control . . . . . W. A. Welch
Definition of Chlorination Terms . . . . . R. C. Clement
Discussion—U.S. Public Health Service Drinking Water Standards . . . . . *Led by* J. K. Hoskins
Some Problems of the Reconversion Period . . . . . Harry E. Jordan
Main Cleaning . . . . . Whitworth Cotten
Leak Survey . . . . . H. E. Beckwith

Wisconsin Section—November 13–15, 1945

Address of Welcome . . . . . Joseph P. Schwada
Selling the Water Utility Locally . . . . . Leonard N. Thompson
Increasing Sale of Revenue Water . . . . . James Myers Jr.
Long-Range Planning . . . . . L. A. Smith
Treating Water With Fluorine to Prevent Teeth Decay . . . . . M. Starr Nichols
Cost of Living Index As a Basis for Fixing Wages . . . . . Ovid B. Blix
Checking the Distribution System . . . . . Harry Breimeister
General Discussion—Water Rate Schedules . . . . . *Led by* Walter Peirce
The Ground Water Situation in Wisconsin . . . . . L. F. Warrick
Panel Discussion—The Problem of Ground Water Level Recession . . . . .
Arthur P. Kuranz, Harold L. Londo, M. F. Linnan, John W. Gibb, Arnold Lenz, E. F. Bean, F. T. Thwaites and L. A. Smith
Co-operation of the United States Geological Survey With State Authorities . . . . . A. G. Fiedler
Meter Maintenance and Repair . . . . . Harold L. Londo
Ranney Wells at Manitowoc, Wis. . . . . . R. E. Cannard
Conditioning of Ground Water Supplies . . . . . H. M. Olson
Surface Water Supplies in Wisconsin . . . . . O. J. Muegge
Construction of Lake and River Intakes . . . . . Chas. B. Burdick
Chlorine Dioxide Water Treatment . . . . . John F. Synan
Design and Construction of Water Purification Plants . . . . . John A. Fulkman
Treatment of Surface Waters . . . . . J. J. McCarthy

West Virginia Section—November 15–16, 1945

Address of Welcome . . . . . *Mayor* Russell Goodwin
Response . . . . . P. D. Simmons
Demonstration of Electronic Water Purification Process . . . . . Fred E. Stuart
Some Problems of the Reconversion Period Affecting Water Works . . . . . Harry E. Jordan

Public Relations in Water Works Management . . . . Max K. Jones
The West Virginia State Water Commission . . . . W. A. Buchanan
Water Treatment With Ferric Sulfate . . . . J. B. Nickel
Experiences With Water Supply and Sanitation in the South Pacific . . . . J. Paul Blundon
Handling Chlorine Safely . . . . Robert R. Weber
The Chemical Engineers' Approach to the Industrial Waste Problem . . . . John E. Tarman
Putting a Small Filter Plant Back on Its Feet . . . . R. B. Parsons
Experimental Use of Fluorine in Public Water Supplies . . . . Norman F. Gerrie
Automatic Operation Features of a Small Filtration Plant . . E. H. Greenwald and H. E. Davis
Flow Analysis in Distribution Systems . . . . H. R. Speiden
Proposed Federal Pollution Legislation . . . . W. W. Hodge
Water Quality in the Ohio River at Wheeling . . . . A. R. Todd

Florida Section—November 15–17, 1945

Address of Welcome . . . . *Mayor* Herbert A. Frink
Address of Welcome . . . . Thomas F. Smith
Response . . . . G. E. Ferguson
Additions to Miami Water Supply System . . . . C. F. Wertz
War Experiences of a Small Water Supply System . . . . S. K. Keller
Water Supply and Treatment Problems at Sarasota, Fla. . . . . Wylie W. Gillespie
The Stellar Filter . . . . F. A. Eidsness
Demonstration of Electronic Water Purification Process . . . . Fred E. Stuart
American Water Works Association Affairs . . . . Leonard N. Thompson
Conservation of Municipal Water Supply in Air-Conditioning Systems . . . . N. C. Ebaugh
Water Conservation . . . . A. P. Black
Water Supply in the Aleutians . . . . Lynn Perry
Problems of Military Water Supply . . . . David B. Lee

The following sections held meetings in affiliation with other associations and groups: Illinois Section and West Shore Water Producers Association; Michigan Section and Michigan Conference on Water Purification; Montana Section and Montana Sewage Works Association; New Jersey Section and South Jersey Water Superintendents; and North Carolina Section and North Carolina Sewage Works Association.

Section Meetings—1941-1945

Section	*1941*	*1942*	*1943*	*1944*	*1945*	*Meeting Place—1945*
California	Oct. 22–24	Oct. 28–30	Oct. 27–30	Oct. 24–26	Oct. 23–25*	Los Angeles, Berkeley, Calif.
Canadian	June 23	Apr. 15–17	Apr. 7–9	Apr. 19–21	Mar. 19–21	Toronto, Ont.
Cuban	—	Feb. 17	Oct. 4	—	—	No scheduled meeting
Florida	Nov. 13–15	Nov. 12–14	Nov. 18–20	Nov. 16–18	Nov. 15–17	Miami Beach, Fla.
Four States	Nov. 5–7	Oct. 7–9	Oct. 14–16	Nov. 8–10	Dec. 13–15	Baltimore, Md.
Illinois	Apr. 28–30	June 22	Apr. 8–9	Apr. 11–13	Oct. 30–31	Chicago, Ill.
Indiana	Apr. 24–25	Apr. 9–10	Apr. 29–30	Apr. 13–14	June 12–22*	North Vernon, Evansville, Jasonville, Crawfordsville, Monticello, LaPorte, Columbia City, Anderson, Ind.
Kentucky-Tennessee	Oct. 27–29	Oct. 19–21	—	—	June 4–5	Lexington, Ky.
Michigan	Sept. 24–26	—	Apr. 20–22	Apr. 26–28	Sept. 19–20	Grand Rapids, Mich.
Minnesota	Oct. 9–11	Sept. 24–26	Mar. 12–13	Mar. 16–17	Sept. 11–18*	Mankato, Duluth, Minn., Fargo, N.D.
Missouri Valley	Oct. 20–22	Oct. 22–24	Oct. 15–16	—	Oct. 29–30	Kansas City, Mo.
Montana	May 23–24	Apr. 17–18	May 14–15	May 5–6	Apr. 13–14	Lewiston, Mont.
New England	—	—	—	—	—	No scheduled meeting
New Jersey	Feb. 19	Mar. 26	Mar. 14	Feb. 10	Jan. 29	Elizabeth, N.J.
	May 22	Oct. 7–9	Apr. 9	May 11	July 25	Red Bank, N.J.
	Oct. 16–18	—	Nov. 4–6	Nov. 2–4	Nov. 8–10	Atlantic City, N.J.
New York	Mar. 27–28	Apr. 30–May 1	Mar. 25–26	Apr. 27–28	Jan. 17	New York, N.Y.
	Sept. 11–12	Oct. 15–16	Sept. 30–Oct. 1	—	May 22–25*	Rochester, Syracuse, Albany, White Plains, N.Y.
	Dec. 30	Dec. 30	—	—		
North Carolina	Nov. 3–5	Nov. 3–4	Nov. 2–3	—	Nov. 5–7	Charlotte, N.C.
Ohio	May 15–16	May 14–15	Apr. 12	May 18–19	Oct. 23–26*	Findlay, Wilmington, Athens, Massillon, Ohio
Pacific Northwest	May 8–10	May 8–9	May 7–8	May 12–13	—	No scheduled meeting
Rocky Mountain	Sept. 17–19	Sept. 17–18	Sept. 15–17	Sept. 20–22	Sept. 21	Denver, Colo.
Southeastern	May 12–14	Apr. 20	—	May 8–10	—	No scheduled meeting
Southwest	Oct. 13–16	Oct. 12–14	Oct. 11–13	Oct. 17–19	Oct. 16–17	Shreveport, La.
Virginia	Oct. 30–31	Nov. 5–6	Nov. 22–23	Nov. 14–15	Nov. 8–9	Roanoke, Va.
West Virginia	Oct. 30–Nov. 1	Nov. 12–13	Nov. 4–5	Oct. 26–27	Nov. 15–16	Wheeling, W.Va.
Western Pennsylvania	Aug. 7–9	Sept. 18	Sept. 23	—	Sept. 14	Pittsburgh, Pa.
Wisconsin	Oct. 6–8	Oct. 20–21	Oct. 19–21	—	Nov. 13–15	Milwaukee, Wis.

* Regional meetings

Section Membership at Time of, and Total Attendance at, Section Meetings—1941–45

SECTION	1941		1942		1943		1944		1945	
	Membership	Attendance	Membership	Attendance	Membership	Attendance	Membership	Attendance	Membership	Attendance
California	552	688	566	571	589	915	638	926	663	503
Canadian	262	*	266	410	289	447	323	555	353	800
Cuban	35	†	41	17	36	‡	34	‡	38	†
Florida	78	110	94	108	111	105	138	157	134	120
Four States	210	177	229	345‖	278	359	324	325	330	¶
Illinois	197	152	284	*	282	142	293	126	330	219
Indiana	142	223	142	190	175	200	202	221	206	386
Kentucky-Tennessee	105	91	111	73	117	†	127	†	129	‡
Michigan	124	245	122	†	126	215	135	205	150	152
Minnesota	86	144	90	180	90	178	102	202	120	‡
Missouri Valley	199	153	199	96	201	124	228	†	294	166
Montana	42	66	42	71	46	71	53	82	57	43
New England	139	†	144	†	146	†	154	†	161	†
New Jersey§	221	134	211	184	261	135	266	119	291	91
New York§	472	171	486	200	509	194	510	‡	526	332
North Carolina	113	243	138	192	160	202	155	†	156	272
Ohio	173	118	182	146	205	122	255	261	267	‡
Pacific Northwest	165	262	176	201	205	184	222	242	228	†
Rocky Mountain	88	84	83	86	84	122	91	128	94	90
Southeastern	166	192	196	130	198	†	217	274	231	†
Southwest	167	391	163	329	266	390	328	573	359	211
Virginia	68	153	77	117	97	166	113	160	122	175
West Virginia	65	125	69	113	65	130	75	117	76	‡
Western Pennsylvania	132	135	128	152	142	160	147	†	152	155
Wisconsin	89	237	106	215	117	228	125	†	129	255

* Regular meeting canceled. Business meeting held at annual convention.

† No regular meeting scheduled. Membership given as of date of convention for 1941–44 and as of June 30, 1945.

‡ No record of attendance.

§ Only one meeting recorded here.

‖ Joint meeting with New Jersey Section.

¶ Meeting not yet held.

Re: Binding of the Year's Journals

Through the co-operation of the Library Binding Institute, an organization of binderies which specializes in binding publications into volumes, arrangements have been made to give information and assistance to A.W.W.A. members who want to have their JOURNALS bound. This work may be done in accordance with standards of materials and construction required for durability, service and accessibility by college, reference and public libraries. The American Library Association and the Library Binding Institute have co-operated in promulgating "Minimum Specifications for Class A Library Binding" based on research and production and performance experience.

A committee of the American Library Association has certified responsible and reliable library binderies which have proved able to meet these specifications. To obtain standard quality binding, simply request Class A binding at any certified bindery. In obtaining price quotations, state the three dimensions of the volume.

Names and addresses of certified binderies in your area are available from the Library Binding Institute, 501 Fifth Avenue, New York 17, N.Y. Before sending copies to the bindery:

1. Check for missing issues and check each issue for defects, missing pages, etc. Be sure to include the volume index.

2. Tie the twelve issues together carefully so that nothing is crumpled or torn.

3. Write out definite instructions giving your preferences on the following points:

a. Color of binding (one of the following standard colors should be selected: dark green, dark blue, black, brown or medium red).

b. Whether the advertising sections and/or paper covers are to be bound into the volume.

c. An exact copy of the text to be lettered in gold on the backbone. A common form is:

Journal—1¾ in. from top	Vol. 00—4¼ in. from bottom
A.W.W.A.—2¼ in. from top	1900—3¾ in. from bottom

d. If you have had JOURNALS bound before and want your set to match as closely as possible, send a previous volume as a sample. If you want an approximate match, send a "rubbing" of the lettering on a previous volume and indicate the color.

If satisfactory arrangements cannot be made, or if there is any difficulty, advise the A.W.W.A. office and steps will be taken in co-operation with the Library Binding Institute to assure you proper service.

A

JOURNAL

OF THE

AMERICAN WATER WORKS ASSOCIATION

VOLUME 37

1945

AMERICAN WATER WORKS ASSOCIATION

Incorporated

500 Fifth Ave., New York 18, N. Y.

Table of Contents

January

February

nW

March

April

May

June

July

August

September

October

November

December

Subject Index

A

B

C

D

E

F

G

N

O

P

T

U

V

W

Z

Author Index

Abstract Index

All subjects and page numbers in boldface type are the first pages of topic sections or of a number of abstracts on the particular subject.

Authors of Abstracted Articles

NEWS OF THE FIELD

It appears that some water works men have not read as carefully as necessary the recently amended form of order U-1. This order gives the water works field preference ratings which are of value if properly applied and respected.

The order reads in part:

(1) A preference rating of AA–1 is hereby assigned to orders to be placed by a producer for material (other than controlled materials) in every class except (i) the transmission and distribution class and (ii) the meter class, for use in maintenance and repair, as operating supplies, and for minor plant additions.

(2) A preference rating of AA–1 is hereby assigned to orders to be placed by a producer for material (other than controlled materials) in (i) the transmission and distribution class and (ii) the meter class, for use in the repair of an actual or imminent breakdown.

(3) A preference rating of AA–3 is hereby assigned to orders to be placed by a producer for material (other than controlled materials) in (i) the transmission and distribution class and (ii) the meter class, for use in maintenance and repair, as operating supplies, and for minor plant additions, except where an AA–1 rating is assigned in paragraph (b) (2) above.

This means in simple language that water mains, fittings, valves, service line material, meters, etc., should be ordered only with an AA-3 rating assigned *except* when needed for the repair of an already existing or imminent breakdown.

Pumping station equipment, purification equipment and production equipment can be ordered with an AA-1 rating assigned.

The order has been mailed to every water works by the Office of War Utilities. In the interest of fair play in the war effort, it should be studied and followed.

(Continued on page 2)

(*Continued from page 1*)

Marjorie Lovell Burgess, Press and Public Relations Director of the British Waterworks Association and Asst. Editor of the Association's Journal, has become a member of the A.W.W.A.

In her letter of application, Miss Burgess tells her own story.

I am a fully qualified member of the Institute of Journalists. Before joining the staff of the B.W.A. I was Assistant Editor of B.R.C.S. Publications at the London HQS of the British Red Cross Society, and I have had wide and varied experience of journalistic and publicity work. I received my journalistic training as articled pupil of Mr. Arthur Beckett, F.R.S.L., the Sussex author and newspaper proprietor. I have had four books published and twice broadcast in our National programme.

After the war I hope to persuade the Executive Committee of the B.W.A. to let me visit America for a few weeks to study modern water supply and to give a series of lectures. It would be a great encouragement and inspiration to me to come as a member of your Association.

The Annual Meeting of the Louisiana Engineering Society will be held in New Orleans, La., at the St. Charles Hotel, on January 11–13.

(*Continued on page 4*)


The skill that makes sea water
drinkable for him...

(*Continued from page 2*)

R. M. Leggette, formerly in charge of the U.S. Geological Survey's ground water investigations in New York and New England, has opened an office as a consultant in ground water geology at 551 Fifth Ave., New York, N.Y.

Leggett, a graduate of the Univ. of Chicago, had been with the U.S. G.S. for fourteen years when he was commissioned in the Corps of Engineers in July 1942. He spent nineteen months in Algeria and French Morocco as Water Supply and Sanitation Officer of a large area where water supply for the Army was critical.

The former major has published a number of reports for the U.S.G.S. and has written for this JOURNAL. He is a member of the A.W.W.A. and a fellow of the Geological Society of America and of the Geophysical Union.

Milo F. Ohr has joined the firm of Giffels & Vallet, Inc., Engrs., in Detroit, after having been engaged for the past four years on various engineering projects for the Army, the Navy and the Marine Corps in the South and the Southeast.

(*Continued on page 6*)

(Continued from page 4)

Charles R. Henderson, Past President of the A.W.W.A., died on November 29 after a brief illness, in Pittsburgh, Pa., where he had been residing with a daughter.

Mr. Henderson was born in London in 1870, and emigrated with his family to St. Louis when he was twelve years old. Two years later he moved to Quincy, Ill., where, at the age of seventeen, he started in the water works business. After eleven more years, he went to Mexico to engage in ranching and mining. In 1905, he returned to the U.S. and went back into the water supply industry at Waterloo, Iowa. In 1909, he was appointed general manager of the Davenport, Iowa, Water Co., and served in that capacity until he retired ten years ago. Under his direction, the Davenport Water Co. became one of the pre-eminent supplies in the country.

Mr. Henderson was Vice-President of the A.W.W.A. in 1908 and in 1913, on the Executive Committee from 1909 to 1912, and in 1920–21, a Trustee from 1914 to 1916, and President in 1919. He helped establish both the Illinois and the Missouri Valley Sections of the A.W.W.A., and for his many services to the Association and to the field of water supply he was made an Honorary Member in 1936.

Frank Raab, Chairman of the Minnesota Section in 1943–44, and Chemist and Bacteriologist in the Minneapolis Water Dept. for 24½ years, has retired and is now living in Custer, Okla. Before Raab went to the Minneapolis Water Dept. he was employed by the Minnesota Dept. of Health, Div. of Sanitation, for twelve years.

(Continued on page 8)

(*Continued from page 8*)

Donald D. Gold, Chemist and Bacteriologist at the filtration plant at St. Paul, Minn., who was commissioned a 2nd Lieutenant in the Medical Corps in November 1943, is now on duty on a hospital ship.

Lieutenant Gold was graduated from the Univ. of Minnesota in 1940, and went to the St. Paul Water Dept. shortly after that. He was successively Asst. Chemist, Chemist and Bacteriologist, and Acting Supt. of the Filtration Plant during Supt. Ross A. Thuma's service as Major in the Corps of Engineers.

A glossary of foreign welding terms published by the American Welding Society is now available to supplement standard or engineering dictionaries. Contractors, students and others who may have occasion to consult welding drawings or specifications using German, French, Russian or Spanish terms will find the glossary valuable. Many of the terms for which English definitions or equivalents are given have been derived from foreign technical literature and are not found in any standard or technical dictionaries. The glossary is published as a paper-covered pamphlet of 16 pages. The price is 50 cents and it may be purchased from the American Welding Society, 33 West 39th St., New York 18, N.Y.

(*Continued on page 12*)

(*Continued from page 10*)

The 1944 edition of the American Foundrymen's Association's *Cast Metals Handbook,* an extensive revision from the previous edition (1940), deals exclusively with the engineering properties of cast metals and has been prepared especially for use by those who design metal parts and who specify or purchase case metals for industrial products.

The book includes considerable information of value to designers of castings, showing numerous examples of specific structures where redesigning has made possible a greatly improved cast product. A section also is devoted to the significance of strength and ductility tests of metals, covering such tests as resistance to fracture, creep strength, hardness, static and dynamic ductility, corrosion fatigue, wear, etc.

Separate and extensive sections deal with steel, malleable iron, cast iron, and the non-ferrous alloys, all technical data included having been brought up to date in the light of cast metals developments made since publication of the previous edition. The book is intended for long-range use rather than simply to cover specifications made necessary by wartime shortages of and restrictions on metals. However, conforming specifications (A.S.T.M., Federal, Navy, S.A.E., A.M.S. and Bureau of Ships) are shown for both ferrous and non-ferrous products.

Extensive bibliographies are included for each of the various cast metals sections, with the many references to both American and foreign foundry practices adding to the value of the book for research purposes.

The *Cast Metals Handbook* has long been recognized as a standard treatise on the engineering usefulness of all cast metals, and as such should be of interest and value to all mechanical, product and designing engineers. It is available from the American Foundrymen's Association, 222 West Adams St., Chicago 6. The cloth bound volume contains 745 pages, 258 illustrations and 204 tables and costs $6.00.

(*Continued on page 14*)

(*Continued from page 12*)

St. Lawrence County, in northern New York State abutting the St. Lawrence River, is experiencing a water shortage which has resulted from shifts in ground water flow which followed more than a score of earthquakes which occurred this fall. The New York Times reports:

Only a minority of the some 4,500 farms situated in this grassland area along the St. Lawrence River and the Valleys of rivers flowing north from the Adirondack Mountains into the St. Lawrence are believed affected.

The earthquakes are changing the veins underground in many cases, so that drilled wells and springs have gone dry as the water flowed in new directions. . . . The president of the Farmers' Union of St. Lawrence County has issued an appeal for 1,000 well drillers to start operations in the county to rectify the situation.

Water is being drawn in milk-tank trucks and milk cans from the areas where it is still abundant to the areas where the shortage is greatest. All the milk stations in the county are helping as far as possible in keeping a water supply flowing to farmers.

The problem is looked upon as one of finding a sufficient number of well drillers, rather than as a minor catastrophe. The cost of hauling water varies from nothing in some cases to a general average of two dollars a cow a month.

St. Lawrence County is one of the key areas in the milkshed supplying the city of New York.

(*Continued on page 16*)

(*Continued from page 14*)

Proportioneers, Inc., Providence, R.I., has announced the introduction of a Diatomaceous Earth Filter, developed with the co-operation of the U.S. Navy. It is designed for use in conjunction with Proportioneers' Pur-O-Pumper, and the company describes it as producing perfectly clear, potable water quickly and in large quantities, and of particular value in portable equipment, where its compactness, light weight and purifying powers offer many advantages over ordinary sand filters.

Northrop & Co., Inc., has issued a catalog describing Bond-O, a self-calking jointing compound made with a sulfur base and used to joint cast-iron bell-and-spigot water pipe. The catalog gives instructions for using Bond-O, and an inspection test and a measured leakage test are defined. Tables are supplied showing wall thicknesses and weights of centrifugally-cast pipe, followed by a table showing pounds and depth of Bond-O required per joint for pipe diameters ranging from 4 to 60 in., as compared to lead requirements for the same diameters. Another table shows pounds of Bond-O required per 1,000 ft. of pipe. Bond-O furnaces and other equipment are listed in the catalog. Northrop & Co., Inc., is located at 50 Church St., New York 7, N.Y.

(*Continued on page 18*)

(*Continued from page 16*)

VIRGINIA SECTION

The Eleventh Annual Conference of the Virginia Section and the third wartime meeting was held at the John Marshall Hotel, Richmond, Va., Nov. 14 and 15, 1944. Registration totaled 161 delegates and guests.

"Reading of Meters and Collection of Water Bills" was presented by W. B. Harman, Asst. Gen. Mgr., Newport News Water Works Com. He stressed the importance of correctly reading meters and maintaining a history or log of each meter. He also explained savings due to quarterly reading and billing of meters under 1 in. in size.

In his paper "Testing and Repair of Meters," A. T. Lundberg, Chief Engr., Water Dept., Arlington County, Va., summarized many previously published articles on meter repairs.

Seth Burnley, City Mgr. of Charlottesville, discussed "Installation of Services and Selection of Meters" and advised that the size of large meters could best be selected by determining the maximum requirements of the consumer and accepting the rating of the manufacturer of the meters.

"Experiences With Mechanical Joint Pipe" was the title of the paper by E. R. Sharp, Chief, Bureau of Gas and Water Distr., Richmond. The author explained the advantages of mechanical joint pipe in water distribution mains and gas mains.

I. N. Glace, Con. San. Engr., Harrisburg, presented a paper entitled "Prospects and Promises—An Attempt at Crystal Gazing." He predicted problems that confront the water works field, among which were a major dispersal of population, involving administrative problems, rate changes, effects on quality and possible use of dual mains; impact from air-conditioning developments and problems of corrosion and sloughing in old mains and correction of new mains in outlying extensions, such as suburban and rural installations.

"Chlorination Experiences at Norfolk, Va.," was the subject of a paper by S. M. Hodges, Chemist, 37th Street Purification Plant, Norfolk. He described troubles overcome by super-chlorination.

In a paper describing small water supplies along the C. & O. Railroad, H. E. Silcox, Asst. Engr., Water Supply Div., C. & O. Railroad, pointed out the types of water supplies used by communities due to their geographical location.

C. L. Crockett, Chemist, N. & W. Railroad, Roanoke, presented a paper "Eliminating Tastes and Odors From River Supply," in which he described treatment of water from a surface supply containing phenolic compounds.

The recipient of the Fuller Award was Richard Messer, Director of Bureau of San. Eng., Virginia State Health Dept. The citation reads:

(*Continued on page 20*)

(*Continued from page 18*)

"In recognition of his unassuming but outstanding contribution to the public health of the Commonwealth of Virginia through the promotion of improvement in the quality of potable water supplies, and for his modest but valuable leadership in the formation and successful operation of the Virginia Section."

The following resolution was adopted by the Section:

"WHEREAS, the shortage of suitable water now available for use for industrial and domestic purposes supplied from both public and private water systems is known to create a threat of extreme seriousness, and

"WHEREAS, because of this threat every proper effort should be made to lessen the demands for water, particularly during the times of maximum use, and

"WHEREAS, refrigerating equipment is normally in greatest demand at the same time at which the total water demand for other purposes is also at its maximum, and

"WHEREAS, the amount of water used as a part of the operation of such refrigerating equipment can be greatly reduced or eliminated by the installation and the operation of equipment both simple in design and of comparatively low operating and maintenance cost.

"THEREFORE BE IT RESOLVED by the Virginia Section of the American Water Works Association, assembled at its annual business meeting in Richmond, Va., Nov. 14, 1944, that it recognizes the aforesaid threat created by existing and proposed water-cooled refrigeration, and

"BE IT FURTHER RESOLVED, that it is the opinion of the Virginia Section of the American Water Works Association that until such time as other action shall be taken by the American Water Works Association, it recommends that no water utility should supply water from the public distribution system for any new, additional or enlarged refrigeration at a rate in excess of five one-hundredths (0.05) of a gallon per minute per ton of refrigeration being installed or enlarged, and

"BE IT FURTHER RESOLVED, that the Secretary of this Section be directed to send a copy of these resolutions to the Secretary of the American Water Works Association and to the responsible heads of each of the public water supplies located in the area constituting this Section."

W. H. Shewbridge
Secretary-Treasurer

(*Continued on page 38*)

(*Continued from page 28*)

Jones, Ivan W., Supt., Water Div., Kansas Power & Light Co., 801 E. 2nd St., Hutchinson, Kan. (Jan. '45)

Keating, Edward F., *see* Phelps Dodge Copper Products Corp.

Keinath, Herbert L., Supt. of Water Works, Frankenmuth, Mich. (Oct. '44)

King, Elizabeth D. (Miss), Pres., Mechanicsburg Gas & Water Co., 53 W. Main St., Mechanicsburg, Pa. (Jan. '45)

Klenzade Products, Inc., C. B. Shogren, Vice-Pres., Beloit, Wis. (Assoc. M. Oct. '44)

Lauman, C. W., & Co., Inc., H. E. Lauman, Pres., 50 Church St., New York 7, N.Y. (Assoc. M. Oct. '44)

Lauman, H. E., *see* Lauman, C. W., & Co., Inc.

Martin, Stanley F., Chief, Water & Sewerage Div., Los Angeles County Health Dept., 808 N. Spring St., Los Angeles 12, Calif. (Oct. '44)

Nellis, Roy, *see* St. Johnsville, Village of

Nichols, James C., *see* Pittsburgh Pipe Cleaner Co. of Delaware

Niskayuna, Town of, C. F. Carpenter, Supt. of Water & Sewers, 2248 Story Ave., Schenectady 8, N.Y. (Corp. M. Jan. '45)

Parker, Ivy M. (Miss), Chemist, J. S. Abercrombie Co., Box 357, Old Ocean, Tex. (Jan. '45)

Parkhurst, Marvin L., Gen. Mgr., Parkhurst Well & Pump Co., 799 Bloomfield Ave., Verona, N.J. (Oct. '44)

Parrish, Dorothy M. (Mrs.), Chemist, U.S. Geological Survey, 3125B Hemphill Park, Austin 21, Tex. (Oct. '44)

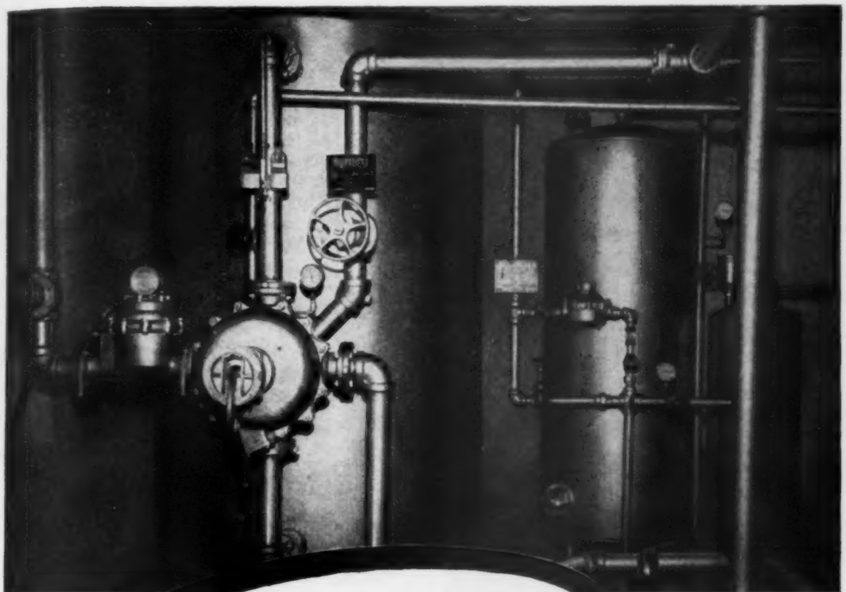
Patrick, L. A., Water Service Engr., Electro-Motive Div., General Motors Corp., La Grange, Ill. (Oct. '44)

Phelps Dodge Copper Products Corp., Edward F. Keating, Sales Mgr., Tube Div., 40 Wall St., New York 5, N.Y. (Assoc. M. Oct. '44)

Pittsburgh Pipe Cleaner Co. of Delaware, James C. Nichols, Dist. Engr., 311 N. 20th St., Philadelphia 3, Pa. (Assoc. M. Oct. '4)

Port Washington Water Dist. Comrs., Verlyn A. Trussell, Treas., 163 Main St., Port Washington, N.Y. (Corp. M. Jan. '45)

(*Continued on page 32*)



(Continued from page 30)

Ramage, H. L., Supt. of Water Dept., Lyons, Kan. (Jan. '45)

Ramsey, James B., Chief Engr. & Supt., Water Dept., City Hall, Kansas City, Mo. (Oct. '44)

Robertson, George C., San Engr., Armco International Corp., 1956 Coffeepot Drive, St. Petersburg, Fla. (Oct. '44)

St. Johnsville, Village of, Roy Nellis, Supt. of Water Dept., St. Johnsville, N.Y. (Corp. M. Oct. '44)

Shand, Harold, Engr., Greater Winnipeg Water Dist., 185 King St., Winnipeg, Man., Can. (Jan. '45)

Shillinger, William D., Lt., Sn.C., San. Officer, Regional Hospital, Camp Joseph T. Robinson, Little Rock, Ark. (Oct. '44)★

Shogren, C. B., *see* Klenzade Products, Inc.

Smith, W. V., Supt., Water Works, Cameron, W.Va. (Affil. M. Oct. '44)

Tarrant, Joseph, Research & Designing Engr., Paterson Engineering Co., Ltd., Sunnyside, 14 King's College Rd., Ruislip, Middlesex, England (Oct. '44)

Taylor, Robert L., Hydr. Engr., U.S. Geological Survey, Ocala, Fla. (Jan. '45)

Traugott, John A., Chief Chemist, Jamaica Water Supply Co., 161–20 89th Ave., Jamaica, N.Y. (Oct. '44)

Trussell, Verlyn A., *see* Port Washington Water Dist. Comrs.

Vass, I. G., *see* Waynesboro, Town of

Walker, J. D., Chief Engr., Process Eng. Div., American Well Works, Aurora, Ill. (Jan. '45)

Waynesboro, Town of, I. G. Vass, City Mgr., Waynesboro, Va. (Corp. M. Oct. '44)

White, Walter F., Jr., Assoc. Chemist, Water Resources Branch, U.S. Geological Survey, Washington 25, D.C. (Jan. '45)

Woodson, Riley D., Prin. Asst. Engr., Black & Veatch, 4706 Broadway, Kansas City 2, Mo. (Jan. '45)

REINSTATEMENTS

Deitrick, Le Roy, Supt. of Water Dept., 232 Honeymoon St., Danville, Pa. (June '37)

(Continued on page 34)

(*Continued from page 32*)

Greenburgh Water Dept., Dan C. Nolan Jr., Town Engr., Lyceum Bldg., Tarrytown, N.Y. (Oct. '37)

Hurtado, J. R., San. Chemist, Instituto Nacional de Obras Sanitarias, Box 2833, University Post, Gainesville, Fla. (Jan. '39)

Jack, Grant R., City Engr., St. John's, Newfoundland, Can. (Mar. '30)

Nolan, Dan C., Jr., *see* Greenburgh Water Dept.

Poston, H. W., Asst. Chief Engr. & Supt., Water Dept., City Hall, Kansas City, Mo. (Oct. '34)

Settle, J. E., Cons. Engr., Payne Bldg., Box 1047, Charleston, W.Va. (Jan. '36)

Shaver, Arthur, Asst. Gen. Supt., Standard Brands, Inc., Peekskill, N.Y. (Jan. '41)

Taylor, C. E., Supt. of Utilities, Water Dept., Ellis, Kan. (Oct. '34)

Changes in Address

Changes of address between November 15 and December 15, 1944

Bacon, Vinton W., 1407 U.S. Appraisers Bldg., San Francisco 11, Calif. (Jan. '41)★

Bailey, Allen C., 1100 St. Paul St., Rochester 5, N.Y. (July '42) *MP*

Gillespie, Wylie W., Smith & Gillespie, Engrs., Box 1048, Jacksonville 1, Fla. (July '41)

Kinsel, Harry L., 147 Lowell Ave., Newtonville 60, Mass. (July '35)

Meyer, Norcliffe S., 2nd Lt., ASF, PRD, Camp Reynolds, Greenville, Pa. (Jan. '44)★

Northrop, Guy C., Pres., Northrop & Co., Inc., 50 Church St., New York 7, N.Y. (Oct. '33) *Director '36–'37.* *M*

Olson, Oscar E., Box 507, Chehalis, Wash. (Apr. '37)

Phelps, Ellis K., Sales Mgr., Wallace & Tiernan Co., Inc., 426 S. Eola Drive, Orlando, Fla. (Oct. '44)

Pirnie, Malcolm, Jr., P.A. San. Engr., U.S. Public Health Service, 1407 U.S. Appraisers Bldg., San Francisco 11, Calif. (Oct. '39) *P*

(*Continued on page 36*)

(Continued from page 34)

Pratt, Gilbert H., Wallace & Tiernan Co., Inc., 1262 Commonwealth Ave., Allston 34, Mass. (June '16) *MP*

Quimby, Frank K., 1500 Quincy Ave., Racine, Wis. (July '30)

Raab, Frank, Custer, Okla. (Oct. '21) *P*

Sawyer, Clair N., 704 S. Glendale Ave., Sioux Falls, S.D. (Jan. '41) *P*

Seeholzer, Bert, Jr., New York Mgr., Northrop & Co., Inc., 75 Bergen St., Westwood, N.J. (July '35)

Thomas, Charles F., 75 Meadow Rd., Buffalo 16, N.Y. (Apr. '37)

Treanor, Earl E., 6425 Morningside Drive, Kansas City 5, Mo. (Jan. '44)

LOSSES

Deaths

Becker, Charles H., Mgr., Hydrant & Valve Dept., R. D. Wood Co., 400 Chestnut St., Philadelphia, 5, Pa. (Aug. '27) *Director '36–'39, '44–'47.*

Schwarz, Eugene, Supt., City Water Dept., Rochester, Minn. (June '27) *M*

Stanfield, Z. A., Dist. Mgr., Pittsburgh Equitable Meter Co., 67 McCall St., Memphis, Tenn. (Oct. '40)

Resignation

Moore, Thomas F., Mgr., General Chemical Co., Box 59, River Rouge, Mich. (Apr. '39)

MEMBERS ENTERING MILITARY SERVICE

Ogden, Willis L., 905 S. First St., Champaign, Ill. (Jr. M. Nov. '43) ★

(*Continued from page 20*)

CALIFORNIA SECTION

The Twenty-fifth Annual Meeting and Third Wartime Conference of the California Section was held October 24 to 26, at the Biltmore Hotel, Los Angeles, Calif. There was a total registration of 926, slightly exceeding that of 1943.

The program was planned on the basis of answers to a questionnaire regarding preferences in subject matter on the part of members of the California Section. The result was an interesting program, with an unusually large attendance at all sessions.

The Fuller Award was given to George C. Sopp, Meter and Service Dept. Supt., Dept. of Water and Power, Los Angeles, Calif.

Maj. Rolf Eliassen, Repairs and Utilities Div., Corps of Engineers, Fort Douglas, Utah, spoke on "Some Interesting Observations of Water Treatment Practices." Water supply at the military installations has presented some unusual problems and it is the general policy of the military to secure its water from cities or other available existing supplies if this can be arranged, but where that is impossible water works men, both military and civilian, have had to employ resourcefulness and ingenuity to solve the problems.

(*Continued on page 40*)

(*Continued from page 38*)

Major Eliassen stated that on some of the Caribbean Islands, for instance, supplies were short and runoff is collected from airport runways; it was also necessary to distill sea water. In a western area 2,000,000 acres of "nothing" is used as a bombing range. There the railroad and army share an existing water supply—frequently requiring trains to be held over until the water tanks are filled.

Charles Gilman Hyde, Prof. Emeritus, San. Eng., University of California, Berkeley, Calif., spoke on "Water Purification—Some Reminiscences." Professor Hyde's address included an historical summary of the science of water engineering. During Professor Hyde's career in teaching, he started more than 200 engineers in the water works field.

Professor Hyde presented a hitherto unpublished story of an extensive outbreak of gastro-enteritis in the City of Alameda, Calif., in February 1909, caused by polluted water from wells having defective casings.

A symposium on the U.S. Public Health Service Drinking Water Standards was held, with the following contributions being made:

"Applying the Revised Drinking Water Standards," by J. K. Hoskins, Asst. Surgeon Gen., U.S. Public Health Service, Washington, D.C.

(*Continued on page 42*)

(*Continued from page 40*)

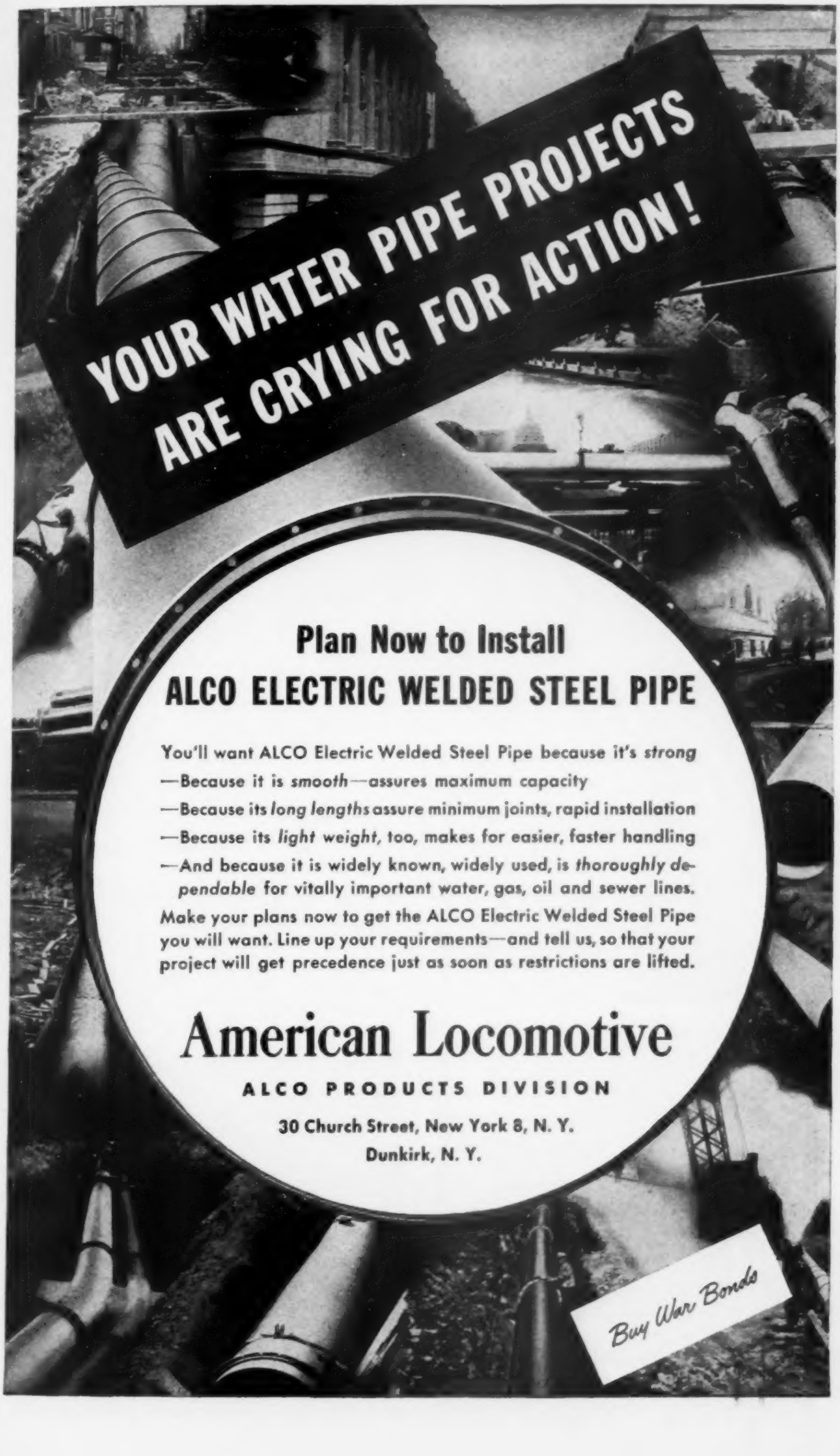
"The Part the State Dept. of Public Health Plays in the Certification of Water Supplies for Use on Common Carriers," by C. G. Gillespie, Chief, Bureau of San. Eng., State Dept. of Public Health, Berkeley, Calif.

"Practical Aspects of the U.S. Public Health Service Drinking Water Standards from the Water Works Standpoint," by R. F. Goudey, San. Engr., Dept. of Water and Power, Los Angeles.

Hoskins brought out that the U.S. Public Health Service is required to certify the safety of drinking water offered by common carriers for the use of passengers carried in interstate traffic. This responsibility is nation-wide, and there were developed in 1914, revised in 1925 and again in 1942, standards designed to meet the requirements of a safe drinking water.

The committee recognized, and clearly stated in their reports, the inadvisability of a "rigid and automatic" application of the standards and specifically counciled that the certifying authority exercise judgment and discretion in applying the standards. But, regardless of this co-operative approach, considerable apprehension has been expressed in some quarters as to the meaning and intent of certain statements in the latest revision, the rigidity of some of the requirements and the possible legal interpreta-

(*Continued on page 44*)


YOUR WATER PIPE PROJECTS ARE CRYING FOR ACTION!
Plan Now to Install
ALCO ELECTRIC WELDED STEEL PIPE
You'll want ALCO Electric Welded Steel Pipe because it's *strong*
—Because it is *smooth*—assures maximum capacity
—Because its *long lengths* assure minimum joints, rapid installation
—Because its *light weight*, too, makes for easier, faster handling
—And because it is widely known, widely used, is *thoroughly dependable* for vitally important water, gas, oil and sewer lines.
Make your plans now to get the ALCO Electric Welded Steel Pipe you will want. Line up your requirements—and tell us, so that your project will get precedence just as soon as restrictions are lifted.
American Locomotive
ALCO PRODUCTS DIVISION
30 Church Street, New York 8, N. Y.
Dunkirk, N. Y.
Buy War Bonds

(*Continued from page 42*)

tions that may be placed upon certain sections to the detriment of the water purveyor.

The Public Health Service takes the attitude that the standard should apply to the product and that the consumer should be protected by the agency having jurisdiction over the water system delivering such product.

C. G. Gillespie stated that the California Dept. of Public Health has been the "Reporting" agency to the U.S. Public Health Service since the beginning of certification in 1914, and he explained that the chore of annual surveys, analyses and certification often lead to short-cuts in getting out the annual reports. The Public Health Service frowned upon these short-cuts, notwithstanding that the imposition of the task on the state engaged far too much time and talent and diverted precious manhours from other more vital State Health work. In spite of this fact the state has gone along with the Public Health Service, partly because their system helped with regard to certain defects but mostly to avoid duplication and the confusion that would result with double standards. The new 1942 standards threw a heavier load on the state, allowing less time to be devoted to water works and therefore placing a greater responsibility on water works superintendents whose waters are used on common carriers.

(*Continued on page 46*)

(*Continued from page 44*)

R. F. Goudey asserted that the water works superintendent is legally and professionally responsible for the delivery of safe water and has a far greater interest and pride in this responsibility than has any state or federal agent. This attitude, he said, is fundamental, and should be reason enough to supplant present coercive regulations with businesslike and common sense educational approaches so far as improved water safety is concerned.

It was concluded by the symposium that it would be desirable to have the Drinking Water Standards altered to include two sections, namely: first, those health hazards, bacteriological, physical and chemical sections which are intolerable from a health standpoint, and second, those bacteriological, sanitary, physical and chemical limits which it would be desirable not to exceed.

Fred D. Pyle, Hydraulic Engr., Water Dept., San Diego, Calif., gave a paper entitled "The Influence of War on Design of Water Facilities for San Diego," which discussed supply and purification problems arising out of the present emergency and described how they were handled by the city.

In "The Corrosion of Steel and Its Mitigation," W. R. Schneider, Asst. Engr., Pacific Gas & Electric Co., Oakland, Calif., limited his dis-

(*Continued on page 48*)

(*Continued from page 46*)

cussion to the corrosion of steel pipes under water and buried in the soil. The causes of such corrosion and various methods for protection were defined.

W. J. O'Connell, Jr., Technical Consultant, San Francisco, presented a paper entitled "Trends in Licensing Professional and Sub-Professional Water Works Employees and Unionization."

Col. Rufus W. Putnam, C.E., U.S. Engineer Office, Los Angeles, spoke on "Late Developments in U.S. Army Water Supply Methods at Home and Overseas." In the course of his discussion he brought out that the development of water supply is the No. 1 problem for the military engineer, whether it be for a training camp at home or for troops in combat overseas.

The development, purification and transportation of water overseas is a function of the engineer water supply battalion assigned to any Army. A water supply battalion consists of about 500 officers and men and equipment consisting of 15 water transportation units, six 750-gal. tank trucks and 9 purification trucks. In addition, the battalion has eighteen 3,000-gal. capacity canvas tanks and six 260-gal. capacity canvas basins. The purification unit is a truck-mounted filter plant with a capacity of about 90 gpm. Ammonium aluminum sulfate is utilized for coagulation, sodium carbonate for pH control and sterilization is effected by liquid chlorine. For smaller isolated groups a portable purification unit using hypochlorites and having a capacity of 15 gpm. is used.

In "Operation and Maintenance of Water Treatment Plant Appurtenances," Carl M. Hoskinson, Chief Engr. and Acting Supt., Div. of Water and Sewers, Sacramento, Calif., said that he believes that the operation of any piece of equipment is not beyond the limits of average intelligence, whereas the repair after breakdown and maintenance after an original failure sometimes taxes the imagination and ability of capable mechanics. He therefore devoted the paper to a discussion of the problems which arise in keeping equipment in running order.

(*Continued on page 50*)

(*Continued from page 48*)

James M. Montgomery, Cons. Engr., Los Angeles, read a paper on "Disposal of Softening Plant Wastes," in which he described the chemical reactions in each of the three most common softening processes, the waste products produced and a variety of means of disposal.

Lee Streicher, Chief Chemist, Metropolitan Water District of Southern California, gave a paper on "Operating Experiences at LaVerne Softening Plant; Experimental Work." He described operating problems at this great terminal reservoir of the Metropolitan Water District's Colorado River Aqueduct and the experimental work being done on the control of corrosion and on the new process of electrolytic treatment of water.

Paul F. Bovard, Mgr., California Filter Co., San Francisco, Calif., presented a paper entitled "Application of Ion Exchangers." He showed that by the use of ion exchangers it is possible to produce a water equivalent to distilled water and comparable in cost.

A paper on "Softening Water for Oil Field Purposes" was presented by F. T. Willis, Supervising Foreman, Chanslor-Canfield Midway Oil Co., McKittrich, Calif.

Carl Wilson, Consultant, Los Angeles, spoke on "Bacteriology of Water Pipes" (see page 52, this JOURNAL).

D. W. Graham, Chief Chemist, Dept. of Water and Power, Los Angeles, followed with "Trends in American Water Laboratory Practice." His conclusions, based on a questionnaire sent to 46 representative laboratories, were that physical methods are replacing many of the traditional chemical procedures; that the development of new tests, together with the increased knowledge of physiological, biological and industrial relationships, has resulted in analyses being streamlined for specific purposes, permitting more pertinent information with economy of time and material; and that many "standard" procedures are inadequate and in need of revision in the light of recent analytical progress.

(*Continued on page 52*)

(*Continued from page 50*)

J. J. Connors, Chemist and Bacteriologist, East Bay Municipal Utility District, Oakland, read a paper entitled "Simplification of the Soap Method of Determining Calcium, Magnesium and Total Hardness in Water."

Ted V. Ackerman, Asst. Engr., Pasadena Water Dept., Pasadena, Calif., read a paper, "Value of the Water Works Chemical Laboratory," prepared by E. I. Lynde, Asst. Engr., and Frank E. Marks, Chemist, Pasadena Water Dept.

Chester A. Smith, Cons. Engr., Burns & McDonnell Eng. Co., Kansas City, Mo., presented a paper entitled "Postwar Planning for Water Supply Utilities."

"Cross-Connection Control and Elimination" by W. E. Shaw, Regional Water Works Advisor, Bureau of San. Eng., State of California, gave the history and emphasized the significance of cross-connection control. He pointed out that numerous hazards have arisen in California because of the rapid expansion of wartime activities.

James H. Howard, Gen. Counsel, Metropolitan Water District of Southern California, Los Angeles, presented "Liability for Water-Borne Disease," in which he explained why governmental immunity from suits based upon negligence of municipally-owned utilities' employees or agents is not held by courts, as supplying water is not held to be a governmental function.

Charles K. Itter, Design Engr. of the Water System of the Los Angeles Dept. of Water and Power, presented a paper entitled "Distribution System Flow Analysis Methods."

"Water Consumption and Unaccounted for Losses" was presented by H. A. Harris Jr., Engr. of Design, California Water Service Co., San Jose, Calif. In the paper, average and maximum daily use for the various communities served by the company is shown and the determination of unaccounted-for losses is detailed.

B. I. Burnson
Secretary-Treasurer

(*Continued on page 54*)

(Continued from page 52)

C. F. Zapf, Supt. of Water Works, Ventura, Calif., has testified to the effectiveness of the electric fish screen which was installed at the intake of the Ventura water system, in a recent announcement by the Electric Fish Screen Co., manufacturers of the equipment. According to Zapf, fish were quite a problem until about three years ago when the electric fish screen was purchased.

"Before we made this installation," said Zapf, "we had to call on the California Fish and Game Commission every so often to seine the fish out of our reservoirs. Since making the installation, we have had no difficulty whatever as far as fish are concerned."

The manufacturers say that the electric fish screen does not impede the normal flow of water and that it repels fish of all sizes at the intake without stunning them, thus eliminating the loss of game fish to sportsmen.

The screen, invented by Henry T. Burkey, utilizes pipe-like electrodes which swing freely in the water channel, creating an electrified zone for a space of some 10 to 15 ft. extending from the surface of the water to the bed of the channel. Instead of using ordinary current that would stun or kill the fish, an electronic device generates electrical current waves which effectively stop all sizes of fish, causing them to swim away from the unpleasant stimulus. Furthermore, the elimination of fish being sucked into the system and dying on mesh-type screens solves a problem of sanitation, the company points out, since dead fish, unless constantly removed, frequently become covered with diatoms and bacteria, thus contaminating the water.

The Hydraulic Development Corp., New York, N.Y., has announced that Ben F. Crabbe, Birmingham, Ala., who recently severed his connection with that company, is again associated with it. He will sell Hydro-Tite and Fibrex in Alabama, Mississippi, Georgia, Tennessee and Florida, the latter state being in addition to his former territory. Paul K. Fleming, Chicago, will handle sales and distribution of the Hydraulic Development products, in Indiana, Illinois, Wisconsin and Michigan, maintaining a warehouse stock in Chicago.

On Nov. 1, 1944, the Dresser Manufacturing Co., Bradford, Pa., became the Dresser Manufacturing Div. of Dresser Industries, Inc. Since 1931 it had been the parent of one, then two and, by 1942, seven companies. In 1944 three more were added, and the central offices for the ten companies were moved to Cleveland. Neil Mallon, formerly President of Dresser Manufacturing Co., is president of Dresser Industries, Inc. Dresser pipe couplings and fittings, repair clamps and sleeves, rolled rings and hydraulic press and upset forgings will continue to be produced at the Bradford plant. H. P. Boncher continues to be Gen. Mgr. of the plant, and his engineering and sales force remains intact.

NEWS OF THE FIELD

In conformance with the directive issued by the War Committee on Conventions, the St. Louis Convention of the American Water Works Association, scheduled to be held May 7–11, 1945, has been indefinitely postponed.

A conference has been held with the Executive Officer of the War Committee on Conventions, but an understanding concerning Section meetings could not be reached. A communication has been sent to Section officers outlining the nature of the situation and advising what steps can be taken toward planning 1945 Section meetings.

(*Continued from page 1*)

Lt. Col. Harold B. Gotaas, Sn.C., formerly Chief of the San. Eng. Sec. of the Div. of Health and Sanitation in the Office of the Co-ordinator of Inter-American Affairs, Washington, D.C., has been made Chief of the Division. Colonel Gotaas joined the Co-ordinator's Office in June 1942, and since that time has visited every country in the Americas, consulting with leaders of the co-operative health service which is being carried out in eighteen of the republics in a co-ordinated program to safeguard and improve the health of the Western Hemisphere. Much of the work that has been accomplished so far was initiated by Colonel Gotaas's section.

Colonel Gotaas graduated in Civil Engineering from the University of South Dakota in 1928, and the next year received an M.A. in the same field from Iowa State University. After holding several positions in private industry, he became City Engr. of Vermillion, S.D., in 1933. Three years later he received a fellowship from Harvard University, where he took a degree in San. Eng. He thereafter engaged in teaching and consulting. At the time he accepted his commission in the Army he was Professor of San. Eng. at the graduate School of Public Health, University of North Carolina. In 1942, Harvard made him a Doctor of Science.

(*Continued on page 4*)

(*Continued from page 2*)

Nelson A. Pomfret, Watershed Supervisor, North Jersey District Water Supply Commission, Wanaque, N.J., died on Dec. 28, 1944, after a six-month illness, at 50 years of age. During World War I, he interrupted his course at Rensselaer Polytechnic Institute to enlist in the Army. Shortly after his return, he joined the engineering staff of the North Jersey District Water Supply Commission, which he served in various engineering capacities until his death. He played a large part in the construction and operation of the Wanaque water supply system.

Mr. Pomfret actively supported the New Jersey Section of the A.W.W.A. for many years and served on various committees.

Emmons DeBerard, Lt. (j.g.), USNR, has been assigned to the Public Works Dept. of the Naval Air Station at Glenview, Ill., after having completed his training at the Naval Training School, Princeton, N.J. Lieutenant DeBerard was formerly associated with Greeley & Hansen, Cons. Engrs., Chicago.

(*Continued on page 6*)

(*Continued from page 4*)

Denis O'Brien, the "grand old man" of the water works manufacturing industry, died on the morning of January 31. He was an Honorary Member of the American Water Works Association and a past member of its Board of Directors. He was the moving spirit in the organization of the Water and Sewage Works Manufacturers Association and since then constantly identified with its activities and policies.

Arthur M. Buswell was released from active duty as Major in the Sanitary Corps on January 7. He had been serving as Chief of the Water Chemistry Sec., Medical Research Lab., Edgewood Arsenal, Md., since June 1943. He is being retained in the Officers' Reserve and as Civilian Consultant to the Chemical Warfare Service.

Buswell has returned to his former position as Chief of the Illinois State Water Survey and as Professor of Chemistry at the University of Illinois, Urbana, Ill.

(*Continued on page 8*)

(*Continued from page 10*)

Alfred H. Fletcher, who for the past four years has been Associate in the Dept. of San. Eng., School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md., has accepted a position as Assistant to Sol Pincus, Sr. San. Engr., in the New York City Dept. of Health.

At Johns Hopkins, Fletcher worked with Dr. Abel Wolman in teaching sanitary engineering to health officers and engineers taking graduate study leading to M.P.H. degrees. Before going to Baltimore, he was for twelve years Director of the Bureau of San. Eng. in the Memphis, Tenn., Dept. of Health. He took a B.S. in San. Eng. at the Massachusetts Institute of Technology in 1921, and received an M.S. in San. Eng. from Harvard University in 1932.

John L. Sybrandt, Mgr. of the Chicago office of The Ludlow Valve Mfg. Co., Inc., has retired after a number of years in that post. Sybrandt's position is to be filled by Lowell E. Sennet, an engineer with many years' experience in valve applications. Sennet was graduated from the Case School of Applied Science and has previously been with the engineering departments of the Grinnell Co. and the Crane Co.

(*Continued on page 14*)

(*Continued from page 12*)

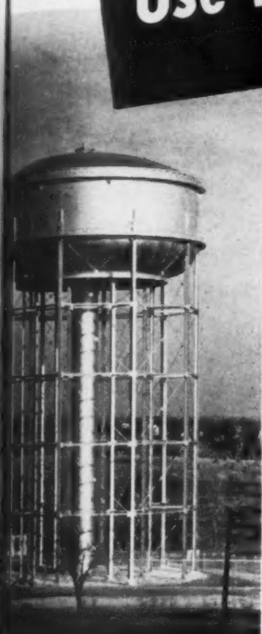
The A. P. Smith Mfg. Co., effective Jan. 1, 1945, will discontinue the manufacture of its Federal water meter line. The company has arranged that an adequate supply of spare parts for all meters now in service shall be maintained for its customers.

The company decided on this course after a prolonged absence from the meter field. Early in 1942 the company's Water Meter Div. undertook certain direct war contracts for the production of power-driven machine-gun components and other war material. The expansion of this work led to the complete cessation of meter manufacture in the spring of 1942 when Meter Limitation Order L-154 was issued.

In June 1944 when L-154 was relaxed to permit again the manufacture of bronze-case meters, the company's commitments on war contracts which were then, and are now, being produced in its meter department precluded the early return to meter manufacture.

The company has, therefore, decided to withdraw from the meter field and concentrate its energies, in the postwar period, on the manufacture of its regular line of Smith products, which includes gate valves, fire hydrants, water works brass goods, tapping machines, inserting machines and specials.

(*Continued on page 16*)



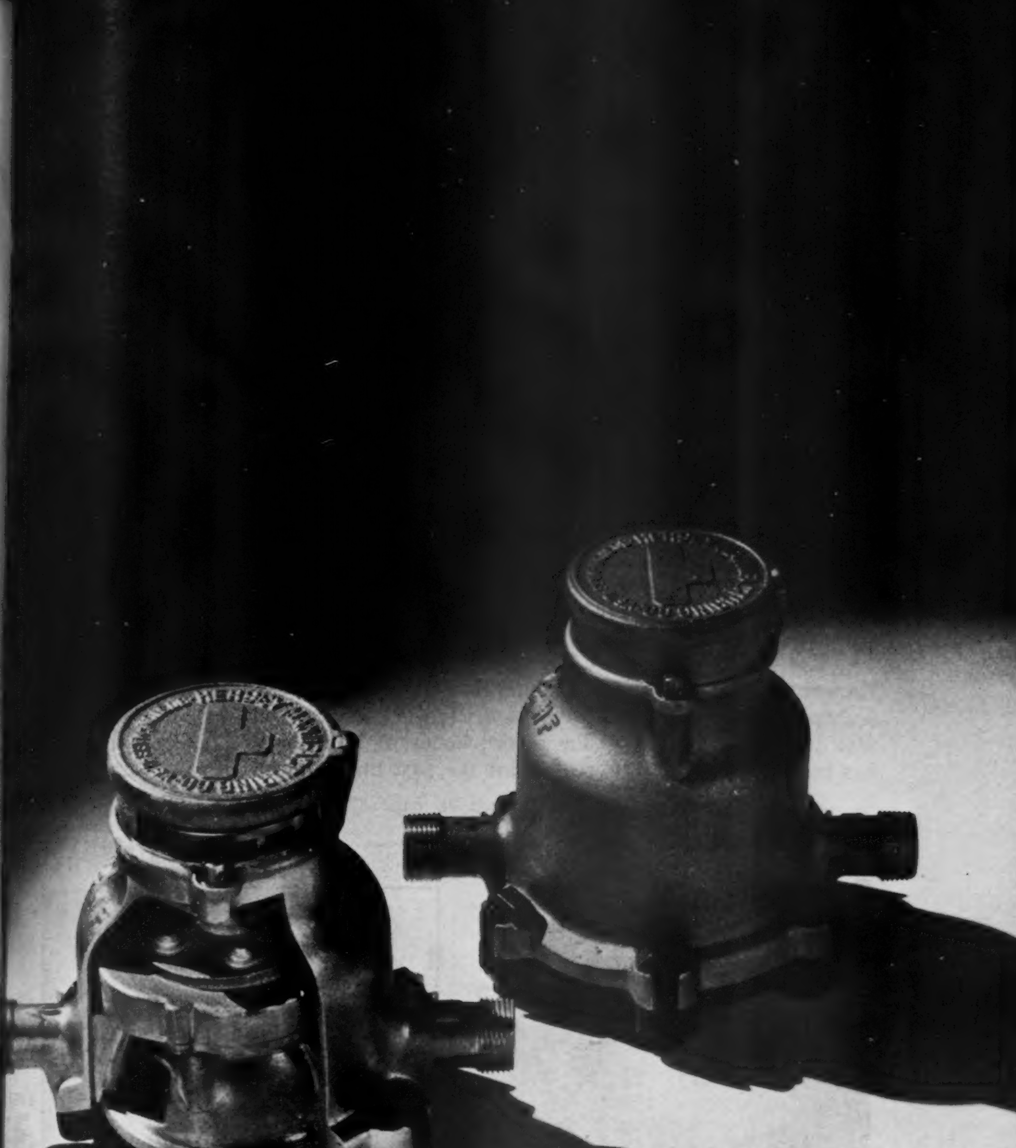
(*Continued from page 16*)

Roger W. Armstrong, formerly Deputy Chief Engr., New York Board of Water Supply, has been promoted to the post of Chief Engr. to succeed Charles M. Clark, who retired on January 1.

Armstrong was graduated from Tufts College in 1902 and was assistant to John R. Freeman for a short period after receiving his degree. He entered the employ of the Board in 1906. He was at first a member of the Designing Div., and later worked on experiments on vaned nozzles which were subsequently utilized on the aerators at Kensico and Ashokan reservoirs.

A chlorine-dioxide process for purification of water supplies is now being utilized by Niagara Falls, Lackawanna, North Tonawanda and Tonawanda, N.Y., Lockport, Pa., Bangor, Me., and Greenwood, S.C., according to a recent announcement from the Mathieson Alkali Works, New York, N. Y. According to Mathieson Alkali, the chlorine-dioxide process was developed at Niagara Falls to combat unpalatable water resulting from contamination by industrial wastes and algae. It consists of chlorination to destroy bacteria, followed by treatment with chlorine dioxide to remove tastes and odors.

(*Continued on page 20*)



(*Continued from page 18*)

The Water Resources Review of the United States and Canada, published by the United States Dept. of the Interior Geological Survey, in collaboration with the Canadian Dept. of Mines and Resources Dominion Water and Power Bureau, has issued a report on the "Water Year 1944," which covers Oct. 1, 1943–Sept. 30, 1944. The general picture concerning water supply is as follows:

Damaging floods and excessive runoff in the agricultural Central West and droughts in the important hydro-power producing areas of the industrial Northeast and Northwest were the dominant abnormalities of the water year. Water conditions with respect to war needs were not so favorable as last year.

Although stream flow in the West was widely and frequently subnormal, especially in the Columbia and Gila River Basins, irrigation supplies were adequate chiefly because of the relatively large carryover of storage from last year. Storage reserves on hand at the close of the year as a safeguard against possible deficiencies next year, although diminished, are not generally less than normal.

The year was the third wettest on record in the north central region from Kansas to Manitoba, and the annual flow of representative streams in Iowa and Nebraska was the greatest on record. The excessive annual volume of runoff was due in major part to the record floods of April, May and June. Runoff has been excessive in this region for the past three years.

(*Continued on page 22*)

(Continued from page 20)

The second wet area extended from east Texas to northern Florida. . . . Streamflow in Canada was generally subnormal. . . .

Runoff during the water year was exceptionally deficient in the Pacific Northwest states and British Columbia. . .

For the country as a whole stream flow averaged 108 per cent of normal. . . . Natural ground water levels . . . were generally above normal in the north central and Rocky Mountain states. . . . They were somewhat below normal in the southern and eastern states during most of the year. . . .

Public water supplies for some of the larger cities in Massachusetts, New York, New Jersey, Pennsylvania and Maryland, as indicated by reports of selected reservoirs, average about 95 per cent of last year and 87 per cent of normal. The net decrease in storage during the year is probably due to subnormal stream flow in this region and to increasing demands for water. Total storage in four reservoirs in Ohio is 72 per cent of last year, an above-normal year. Storage in ten municipal reservoirs of San Diego, Calif., and in the Hetch-Hetchy reservoir of San Francisco is about the same as last year.

The succession of floods in the west central states during April, May and June, following floods of comparable magnitude one year earlier, was not only the major flood event of the year, but perhaps of many years, since the relatively close succession of floods of this magnitude appears extraordinarily unusual. . . .

(Continued from page 40)

Changes in Membership

NEW MEMBERS

Applications Received December 1 to 31, 1944

★ *denotes military service*

Aldrich, Henry V., Designing Engr., Houston Utility Dept., 703 City Hall, Houston 2, Tex. (Jan. '45)

Allen, Cooper H., Mgr., Kansas City Office, McWane Cast Iron Pipe Co., Dierks Bldg., 1006 Grand Ave., Kansas City 6, Mo. (Jan. '45)

Ball, E. Bruce, Glenfield & Kennedy Ltd., Kilmarnock 28, Glasgow, Scotland (Jan. '45)

Brader, Ralph L. J., Chairman, Northampton Borough Munic. Authority, 2019 Main St., Northampton, Pa. (Jan. '45)

Bronson, James B., Mgr., Missouri General Utilities Co., 1007 Pine St., Rolla, Mo. (Jan. '45)

Clinton, Merritt O., Pres., McMahon Engineering Co., Menasha, Wis. (Jan. '45)

Codell, Winfield S., Asst. Dist. Mgr., Builders-Providence, Inc., 807 Hardt Bldg., 1649 N. Broad St., Philadelphia 22, Pa. (Jan. '45)

Coffin, Edwin F., Jr., Asst. Engr. (R), U.S. Public Health Service, 420 Sixth Ave., N., Nashville 3, Tenn. (Jan. '45)

Coleman, Chas. E., Engr., DeLaval Steam Turbine Co., Trenton 2, N.J. (Jan. '45)

Cunningham, Francis P., Engr., Neptune Meter Co., 4713 N. Knox Ave., Chicago, Ill. (Jan. '45)

Cunningham, Geo. A., Salesman, Hays Mfg. Co., 207 Euclid Ave., Birmingham, Ala. (Jan. '45)

(*Continued on page 28*)

(*Continued from page 24*)

Day, Charles J., Vice-Pres., James B. Clow & Sons, National Cast Iron Pipe Div., Box 2542, Birmingham, Ala. (Jan. '45)

De Hooge, Frank J., Chemist & Chief Watershed Inspector, Passaic Valley Water Com., Union Ave. & Riverview Drive, Little Falls, N.J. (Jan. '45)

Endrud, Selmer, Supt., Water Dept., Mayville City, N.D. (Jan. '45)

Harker, David H., Chief of Staff, Ohio Water Supply Board, 706 Ohio Departments Bldg., Columbus 15, Ohio (Jan. '45)

Hawkins, Fay (Miss), Supt., Water & Sewer, Water Dept., Charleston, Ark. (Jan. '45)

Hoffman, Howard F., Jr. San. Engr., State Dept. of Health, 18 Pearl St., Utica 3, N.Y. (Jan. '45)

Houtman, G. D., *see* Media, Borough of

Huston, Wm. E., Water Supply & Sanitation Foreman, Univ. of Illinois, 1005 S. Second St., Champaign, Ill. (Jan. '45)

Iron Mountain Water Dept., H. T. McNeely, Supt., City Hall, Iron Mountain, Mich. (Corp. M. Jan. '45)

Johnson, Arthur L., Foreman, Water Works Dept., Box 422, Kalispell, Mont. (Jan. '45)

Johnson, L. E., Sr. Field Service Engr., The Flox Co., Inc., 1409 Willow St., Minneapolis 4, Minn. (Jan. '45)

Lavenas, Carlos F., Mgr., Drainage Products & Pipe Div., Armco Argentina S.A., Corrientes 330, Buenos Aires, Argentina, S.A. (Jan. '45)

Leggette, R. M., Cons. Ground Water Geologist, 551 Fifth Ave., New York 17, N.Y. (Jan. '45)

Lennox, Charles E., Mgr., Equipment Div., Klenzade Products, Inc., 5861 W. Ogden Ave., Chicago 50, Ill. (Jan. '45)

Lurie, David, Chief Chemist, Joliet Plant, American Cyanamid & Chemical Corp., Joliet, Ill. (Jan. '45)

Maben, R. D., Jr., Town Mgr., Blackstone, Va. (Jan. '45)

Malot, John Woodrow, Commanding Officer, Co. B, 656th Engr. Topographic Battalion, Camp Robinson, Ark. (Jan. '45)★

(*Continued on page 30*)

(*Continued from page 28*)

Maynard, John B., Special Asst. to Gen. Mgr., Water Works Com., Newport News, Va. (Jan. '45)

McNeely, H. T., *see* Iron Mountain Water Dept.

Media, Borough of, G. D. Houtman, Water Dept., State & Jackson Sts., Media, Pa. (Corp. M. Jan. '45)

Patterson, J. R., Sr. Asst. Engr., Russell & Axon, Cons. Engrs., 4903 Delmar Blvd., St. Louis 8, Mo. (Jan. '45)

Pershall, Harry W., Supt., Water Dept., Chain of Rocks Filter Plant, St. Louis, Mo. (Jan. '45)

Piper, K., San. Engr., State Dept. of Health, Bismarck, N.D. (Jan. '45)

Pittser, Willis D., Supt., Water Dept., Liberal, Kan. (Jan. '45)

Stang, Edward R., Supt., Southern California Water Co., 2102 S. Del Mar Ave., San Gabriel, Calif. (Jan. '45)

Underwood, Clarence A., Sinclair Refining Co., East Chicago, Ind. (Jan. '45)

White, Ira E., Supt., Water Dept., Munic. Bldg., Parsons, Kan. (Jan. '45)

Wiest, Gordon J., San. Engr., Technical Service, Pennsylvania Salt Mfg. Co., 425 Cottman St., Jenkintown, Pa. (Jan. '45)

Willey, Frank E., Production Engr., Water Dept., Topeka, Kan. (Jan. '45)

Young, Joe M., Field Engr., Infilco, Inc., 3003 Amherst, Houston 5, Tex. (Jan. '45)

Zeidlhack, F. S., Partner, John W. Cunningham & Assoc., Cons. Engrs., 1112 Spalding Bldg., Portland 4, Ore. (Jan. '45)

(*Continued on page 32*)

(*Continued from page 30*)

REINSTATEMENTS

Coblentz, Maurice H., Major, Sanitarian (R), Acting San. Engr., Dept. of Health & Sanitation, U.S. Public Health Service, Seattle 4, Wash. (Aug. '29) ★

Gurney, Bert, Dept. Mgr., Interstate Machinery & Supply Co., 1006 Douglas St., Omaha 8, Neb. (July '35)

Hall, George Albro, Capt., Sn.C., APO 707, c/o Postmaster, San Francisco, Calif. (July '38) ★

Jester, John M., Div. Engr., Washington Suburban San. Com., Hyattsville, Md. (July '37)

Price, J. Paul, Engr., Water Dept., 411 Mahoning Ave., Warren, Ohio (July '42)

Schanze, C. E., Mgr., Joplin Water Works Co., 214 W. 4th St., Joplin, Mo. (Oct. '38)

Stokvis, R. S., & Sons, Inc., George R. Woods, Mgr., 17 Battery Pl., New York 4, N.Y. (Assoc. M. Jan. '42)

Woods, George R., *see* Stokvis, R. S., & Sons, Inc.

Changes in Address

Changes of address between December 15, 1944 and January 15, 1945

Abplanalp, C. C., Wallace & Tiernan Co., Inc., 1229 W. Washington Blvd., Chicago 7, Ill. (Mar. '31) *P*

Angle, C. F., Supt. of Water Purif., Tubize Rayon Corp., Rome, Ga. (Jan. '38) *P*

Baranousky, Elizabeth (**Miss**), 113 Steamboat Rd., Great Neck, N.Y. (Jan. '41)

Beall, R. R., Chief Engr., Mining Div., American Rolling Mill Co., Montcoal, W.Va. (Affil. Oct. '42) *P*

Berry, Garmon H., 410 Davidson St., Thomasville, N.C. (July '43) *P*

Birkeness, O. T., Mfrs. Repr., 1229 W. Washington Blvd., Chicago, Ill. (May '30) *P*

(*Continued on page 34*)

(*Continued from page 32*)

Blach, Frederick S., 3544 Brandywine St., Washington 8, D.C. (July '44)

Brash, Victor G., Civ. Engr., 909—23rd Ave., Tampa 5, Fla. (July '44)

Brooks, C. B., *see* Robbins Water Dept.

Cecil, Lawrence K., 802 Kennedy Bldg., Tulsa 3, Okla. (Jan. '28) *P*

Chase, Walter H., Chief Engr., Long Island Water Corp., 337 Merrick Rd., Lynbrook, N.Y. (July '40)

Chenery, Charles M., 1070 Eldorado Ave., Clearwater Beach, Fla. (Apr. '40) *M*

Dunden, J. R., 718 Minor Ave., Seattle 4, Wash. (Apr. '44)

Fletcher, Alfred H., San. Engr., City Health Dept., 125 Worth St., New York 13, N.Y. (Jan. '36)

Glover, W. Wayne, Chief Engr., Simplex Valve & Meter Co., 1037 Belfield Ave., Drexel Hill, Pa. (Jan. '42)

Gordon, Milton O., 26 Montague St., Worcester 3, Mass. (Jan. '44)

Hagar, Major C., Box 16, Caruthersville, Mo. (Apr. '39)

Hodgson, Jno. W., Pres. & Gen. Mgr., East Jefferson Water Works No. 1, Box 9068, Metairie 20, La. (Oct. '42)

Hoffman, M. F., Hotel Auditorium, Cleveland 14, Ohio (Oct. '34) *Fuller Award '41. A*

Hughes, Mary (Mrs.), Sales Repr., Vinson Specialty Paint Co., Box 1116, Little River Station, Miami 38, Fla. (Oct. '43)

Johnson, Wayne W., San. Engr., 4252 Beverly Rd., Madison 5, Wis. (Oct. '43) *MP*

Jollberg, H. E., *see* Proportioneers, Inc.

(*Continued on page 36*)

(Continued from page 34)

Keeler, Russell B., 1938 Garth Ave., Los Angeles 34, Calif. (Apr. '44) *MP*

Kopp, Joseph P., APO 948, c/o Postmaster, Seattle, Wash. (Oct. '44)

Ludwig, Harvey F., P.A. San. Engr., U.S. Public Health Service, 1014 S. Harbor View Ave., San Pedro, Calif. (July '39) *Goodell Prize '43. P*

Luthin, John C., P.A. San. Engr. (R), San. Eng. Div., State Dept. of Health, Phoenix, Ariz. (Jan. '40) *P*

Mees, Curtis A., Cons. Engr., 1802 Flagler Ave., N.E., Atlanta, Ga. (Jan. '43)

Middleton, Francis M., U.S. Public Health Service, 707 Pere Marquette Bldg., New Orleans 12, La. (Jan. '43) *P*

Morrow, Vernal H., Field Engr., 707 Water Board Bldg., Detroit, Mich. (Affil. July '40) *M*

Newby, William M., c/o H. E. Acres Co., 2135 Culp St., Niagara Falls, Ont., Can. (Jan. '44)

Nutley Water Dept., Dudley R. Shepard, Town Hall, Nutley, N.J. (Corp. M. July '43)

Ortega, Enrique, Civ. Engr., Box 218, San Juan, P.R. (Jan. '42)

Plummer, Raymond B., Prin. Engr., 632 S. Jefferson Ave., Saginaw, Mich. (Oct. '43) *MP*

Pratt, H. R., Mgr., Klenzade Ohio Co., Box 466, Elyria, Ohio (Dec. '43) *P*

Proportioneers, Inc., H. E. Jollberg, Vice-Pres., 9 Codding St., Providence 1, R.I. (Assoc. M. Apr. '39)

Rhynus, C. P., Box 886, Daytona Beach, Fla. (May '12) *MP*

(Continued on page 38)

(*Continued from page 22*)

Significant floods, occurring in seven months of the water year, were reported in 25 states and one province. . . .

Major areas of deficient water supplies included Quebec, the Maritime Provinces, parts of New York, the Ohio Valley, the Pacific Northwest, British Columbia, and Southern Arizona.

There were significant areas of deficient stream flow in every month of the year. In some places these months of deficient flow followed (as in Tennessee) or were followed (as in Virginia and Mississippi) by above-normal or even excessive flow, so that the net runoff of the year in these places was normal or near normal. . . .

Water conditions were most critical in Maryland and New Jersey during July and in coastal Virginia during July and August. . . .

In the Ohio basin, the drought reached its culmination during July, but storage reserves were ample so no power shortages occurred and, except locally, there were only a few deficiencies in municipal supplies. . . .

The total pumpage of ground water in the United States during the 1944 water-year undoubtedly exceeded that during 1943, which was the greatest on record at that time. The withdrawal of ground water by Army and Navy establishments, by industrial plants and by public water-supply systems remained at high rates or increased in many centers of population.

The Whitemarsh Research Laboratories were dedicated by the Pennsylvania Salt Manufacturing Co. at Whitemarsh, Pa., on October 4 with a luncheon and speeches by officers of the company and by C. F. Kettering, Gen. Mgr., General Motors Corp., Research Div.

Thus the research laboratories of Penn Salt are now housed in the converted home of the late Edward T. Stotesbury. The $2\frac{1}{2}$-million-dollar mansion is of fireproof, reinforced concrete and steel construction, faced with limestone, and has a copper roof and tile terraces. The mansion was already provided with outside utility services, its own steam generator and power plant, ice machinery and ice plant, artesian wells and water storage tanks, a separate sewage disposal system, 65 telephone stations, and passenger and freight elevators. To provide for an integrated program of

(*Continued on page 42*)

(*Continued from page 40*)

work, including offices, library and Patent Division quarters as well as research laboratories, shops, pilot plant facilities, greenhouse and experimental farm, and special electrical and mechanical services, Penn Salt augmented the existing facilities with additional electrical capacity, high pressure steam and a separate system for disposal of laboratory wastes. Architecturally the rooms and the building are practically untouched, and the gardens, which gave the estate a reputation as "The Versailles of America," are being preserved intact.

Two reinforced concrete basements made Whitemarsh Hall the repository of the Metropolitan Museum of Art's treasures for two years during which it was deemed that there was some danger of a German bombing attack on New York.

The Pennsylvania Salt Manufacturing Co. makes chemicals used in water purification and sewage treatment, ammonia and other refrigerants.

The National Board of Fire Underwriters has issued new Standards for the Installation and Operation of Centrifugal Fire Pumps. It is Pamphlet 20, and supersedes the edition of 1939 as amended by the Supplement of October 1943.

NEWS OF THE FIELD

Membership growth of the American Water Works Association continues at a rate which should be the cause for pride on the part of every old-timer.

During 1944 a net gain of 515 brought the total membership of all grades up to 5,485. Only one year in Association history brought more new members—that was 1943. From the low point of 2,221 at the end of 1933, A.W.W.A. has more than doubled its membership.

What place in the industry do the members occupy? This can be answered by the following analysis of 1944 membership:

Superintendents, Managers, Public Relations Directors	39.1%
Engineering and Construction Departments	5.5
Pumping Departments	0.8
Distribution, Service, Meter Departments	1.3
Accounting, Commercial Departments	0.7
Water Treatment Superintendents, Technicians	6.3
Unclassified Water Works Employees	0.6
Mayors, City Managers, City Clerks	1.0
City Engineers, Water Commissioners, Officials	2.7
Consulting Engineers, Consulting Chemists	8.2
Sanitary Engineers (Industrial or Governmental Unit)	6.7
Professors, Instructors, Teachers	1.7
Manufacturers or Their Representatives	14.7
Miscellaneous	10.7
	100.0%

More than 50 per cent of the membership is at the executive level—either managers or superintendents, mayors or city managers, consulting engineers or consulting chemists. In other words, the A.W.W.A. is dominated by those who function at the executive or policy-making level in public water supply operations.

This brings responsibilities to the Association which could be overlooked. That the officers and directors of the A.W.W.A. recognize their responsibilities to the public and to the personnel of water works systems is evidenced by the many instances where the position of the A.W.W.A. on important problems is definitely expressed, by the participation of officially designated representatives in activities of national importance and, most recently, by the adoption by the Board of *The Members Code of Practice*. This brief document has been received with great interest by the field and approval of it has been recorded by many members.

The A.W.W.A. is growing—and growing up.

(*Continued on page 2*)

(*Continued from page 1*)

Denis F. O'Brien, Chairman of the Board of the A. P. Smith Manufacturing Co., East Orange, N.J., died suddenly on January 31.

Mr. O'Brien was born in Killorglin, County Kerry, Ireland, on Oct. 11, 1864, and was educated at Dublin University. He was active in the affairs of the Irish political party associated with Parnell, and on the night in 1882 that Parnell was arrested and taken to England, Denis O'Brien started for America. Those who knew the cultivated and suave gentleman of mature years would never, unless the story were told of him, suspect that he had once been an active political non-conformist.

Mr. O'Brien first went to Detroit, where he had relatives. He soon became general manager of the Galving Brass and Iron Works, western representatives of Anthony P. Smith, water works engineer then in charge of Newark Aqueduct. In 1896, Mr. O'Brien came east and with Mr. Smith formed the A. P. Smith Manufacturing Co. in Newark. Mr. O'Brien was treasurer of the company until Mr. Smith's death in 1910, when he became president and general manager.

Mr. O'Brien patented and developed many types of valves, valve inserting machines, lead furnaces and hydrants, including the "O'-Brien Hydrant," which is standard in New York, Philadelphia, Baltimore, St. Louis, and many other cities throughout the country.

Mr. O'Brien was an Honorary Member of the A.W.W.A. and served four terms as a Manufacturer's Representative on the Board of Directors. He was one of the prime movers in the organization of the Water and Sewage Works Manufacturers Association and was its first president in 1909. He filled the same office again in 1926 and in 1942.

His son, Hubert F. O'Brien, succeeded him as president of the A. P. Smith Manufacturing Co. several years ago.

(*Continued on page 4*)

(Continued from page 2)

The A.P.O. recently delivered to Association headquarters the following bits:

Past-Pres. Jack J. Hinman Jr., Lt. Col., C.E., writes from the Pacific Theatre that he is "surprised and pleased to learn that I now 'join the ranks of the elder and honored "statesmen" of the Association' on completion of thirty years of continuous membership." Colonel Hinman has sent for a number of back issues of the JOURNAL, which he is sure "will be helpful . . . and of course will be interesting."

"I am hoping," he continues, "to do quite a bit of professional work in the course of my activities. I have done some already. But of course I cannot tell any details at the present time."

T/4 Charles V. Costello, former Chief Filter Operator, Binghamton, N.Y., inquires from "Somewhere in Holland": "If you have any information on the new use of CO_2, chlorine and sodium chlorite for sterilizing water, I would very much like to receive it." Sgt. Costello will be kept abreast of latest water works developments, it is hoped to the advantage of the Army and the Hollanders.

(Continued on page 6)


15,000 MILES
of
HILL-HUBBELL
PRECISION APPLIED
STEEL PIPE
PROTECTION
TESTIMONIALS? YES! Each mile of the 15,000 is a service testimonial for those customers who are reaping the reward of uninterrupted pipe line efficiency.
Let us explain our Factory Process method of Steel Pipe Protection to you. Write for detailed *Book of Pipe Protection* today.
GENERAL PAINT CORPORATION
HILL, HUBBELL & CO. • Division • Cleveland, Ohio
• EXPORT OFFICE: SAN FRANCISCO, CALIFORNIA, U. S. A. •

(*Continued from page 4*)

William J. Lyman, Southern Sales Manager of the National Cast Iron Pipe Co., died in Owensboro, Ky., on January 15, while on a business trip.

Mr. Lyman was born in Knoxville, Tenn., and was educated at the University of Tennessee. He joined the staff of the National Cast Iron Pipe Co., a division of James B. Clow & Sons, in 1929, and maintained his headquarters in Birmingham, Ala. He had been an Active Member of the A.W.W.A. since 1936.

Mr. Lyman was a brother-in-law of Wellington Donaldson, Chief of the Bureau of Sewage Disposal Design, New York City.

M. F. Hoffman, former Commercial Supt., Cincinnati Dept. of Water Works, has completed a contract with the city of Cleveland, which engaged him to co-ordinate and reorganize the commercial, collection and accounting functions of the Dept. of Public Utilities, comprising the Divs. of Water & Heat, Light & Power and Sewage Disposal. He was associated with Burns & McDonnell Eng. Co. of Kansas City for the survey, and as a result of his report the Consolidated Commercial Div. has been streamlined and mechanized to improve public relations and effect economies of more than $400,000 a year.

Hoffman has had 35 years' experience in public utility and government research and administration. Included are seventeen years as Revenue Supervisor, Cincinnati and Suburban Bell Telephone Co., three years as Research and Methods Asst., Cincinnati Bureau of Governmental Research, and fifteen years as Commercial Supt., Cincinnati Water Dept. He won the Fuller Award for the Ohio Section in 1941 for his "outstanding activities in the development of the Ohio Section and the conduct of its affairs."

Hoffman is now residing in Cleveland, where he is engaged in further consultation practice.

(*Continued on page 8*)

(*Continued from page 6*)

Seth M. Van Loan, Chief Engineer of the Philadelphia Water Rehabilitation program, and formerly Chief of the city's water bureau, died on February 8.

Mr. Van Loan was born in Athens, N.Y., in 1873, and first engaged in engineering work on the Erie and State Barge Canal survey in the 1890's. He went to Philadelphia in 1901 as an Assistant Engineer in the Municipal Water Filtration Plant. The program which he presently headed is an $18,000,000 project.

Mr. Van Loan, who joined the A.W.W.A. in May 1914, was a trustee for the 1928–30 term, and a Director from 1933 to 1936. In 1943, the Four States Section named him for the Fuller Award for his "long and valuable services to the water works field, the City of Philadelphia, the Four States Section and the A.W.W.A."

Capt. Joseph M. Sanchis, Sn.C., has succeeded Major A. M. Buswell as Chief of the Water Chemistry Section of the Medical Research Laboratory at Edgewood Arsenal, Md. Captain Sanchis was formerly with the Div. of San. Eng., Dept. of Water and Power, Los Angeles.

W. Douglas Smith is now located in Greenville, S.C., where he is representing Eshelman & Potter, Charlotte, N.C., Southern Representatives for Hagan Corp., Hall Laboratories and Calgon, Inc. Smith recently retired to inactive duty after serving 27 months as Post Chemical Warfare Officer, Camp Blanding, Fla., with the rank of major. Smith holds a B.S. degree in chemistry from Furman University and an M.S. in Chemistry from Tulane University. He was chemist for the Pacific Mills, Lyman, S.C., until 1934, when he became dyestuff salesman for Geigy Co., Inc. In 1940 he joined the Charlotte office of Eshelman & Potter.

(*Continued on page 12*)

(Continued from page 8)

The Journal of the British Waterworks Association for December 1944 tossed orchids across the Big Pond in the following form:

The cover of the September number of the JOURNAL of the American Water Works Association—our progressive "opposite number" in the U.S.A.—bore as its sole illustration a reproduction of the B.W.A. water economy poster, "The Fireman." "We pay tribute," says editorial comment, "to our British contemporaries for their fine Public Relations programme which has done so much to make the people active partners in an economy and safety campaign of national importance."

The Public Relations Committee have been much encouraged by this generous tribute. Incidentally, Mr. H. Berry, M.I.Mech.E., A.I.Struct.E., F.R.S.A., Chairman of the Metropolitan Water Board and Chairman of the B.W.A. Public Relations Committee, has been elected an Active Member of the American Water Works Association.

Capt. C. W. Brinck, S.C., has been assigned to Military Government and, after a session at the University of Virginia, is now receiving training at Yale University. When he first enlisted he served at Carlisle Barracks, Pa., and Edgewood Arsenal, Md., and then was Medical Inspector at Keesler Field, Miss., for fifteen months.

Captain Brinck graduated from Montana State College in 1935 with a B.S. degree in Chem. Eng. and received an M.S. in San. Eng. from Harvard University in 1940. He was Asst. Director of the Water and Sewage Div., Montana State Board of Health, from 1936 to 1942.

Samuel I. Zack, formerly San. Engr. associated with Stone & Webster Eng. Corp., Newton Highlands, Mass., is now San. Engr. with Gannett Fleming Corddry & Carpenter, Inc., Harrisburg, Pa., where he is in charge of engineering and design of water, sewage and industrial wastes treatment plants. Zack, an alumnus of Massachusetts Institute of Technology, was for ten years with the San. Dist. of Chicago, assigned to design, investigations, operation, experimental and large scale treatment plants, and stream pollution and industrial wastes problems. For the next eight years he was associated with the Filtration Equipment Corp. on engineering and sales of water and sewage equipment.

(Continued on page 16)

(*Continued from page 12*)

Francis M. Middleton, P.A. Sanitarian (R) in the U.S. Public Health Service, has been transferred from the mobile laboratory operations of the Water and Sanitation Investigations Station of the U.S.P.H.S. in Cincinnati to the office of U.S.P.H.S. District No. 4 in New Orleans. His new duties include water, sewage and food sanitation projects in the District. Middleton, who makes his home in Wilmington, Ohio, has been with the U.S.P.H.S. for six years.

First Lt. Richard E. Roby, Sn.C., is now posted in Iran, where he is in charge of a Malaria Control Unit. While on duty in this country, Lieutenant Roby was stationed at Texarkana Ordnance Center, and at Camp Barkeley, Tex. As sanitation officer or medical inspector of these installations, his work consisted of checking conditions affecting the health of the troops. In addition, he served as sanitary engineer for nearby camps which were without such services.

Lieutenant Roby writes from Iran that, "The problems connected with the type of work I am doing are many and interesting, but I'm anxious to have a hand in some of the water work over here, and soon, I hope, to get back to the Hackensack Water Co. and home."

Harold S. Hutton, Sales Mgr., Wallace & Tiernan Co., Inc., Newark, N.J., was honored by his associates at a dinner on February 8, on completion of twenty-five years with the company. He has been an Active Member of the A.W.W.A. for the same period.

Hutton, who graduated from Columbia University in 1916 with the degree of Civil Engineer, was an officer in the U.S. Public Health Service and served as a First Lieutenant in the Engineer Corps in World War I. He joined Wallace & Tiernan in 1920, and was subsequently appointed Dist. and Div. Mgr. with headquarters in Pittsburgh, where he was located for a number of years prior to coming to Newark upon his appointment as Sales Mgr.

(*Continued on page 20*)

(Continued from page 16)

Gordon E. Mau, former Field Engr., Dravo Contracting Corp., Pittsburgh, Pa., has been appointed San. Engr. in the Iowa State Health Dept., Des Moines. He had been engaged previously as Chief Operator of the water filtration plant at the State University of Iowa, Iowa City.

Capt. Isador W. Mendelsohn has returned to civil life and is now San. Engr. with the Corps of Engineers, War Dept., Washington, D.C. He has been on active duty for more than three years with the U.S. Army in this country and overseas, as Post Engr., Engr. Supply Officer, and San. Engr. with Allied Military Government.

Capt. Herman M. Ross, Sn.C., is now Post San. Eng. Officer at Fort Francis E. Warren, Wyo., and is traveling San. Engr. for the Service Command. Before entering the Service, Captain Ross was engaged on research and development in sanitary engineering equipment, particularly in the field of industrial waste treatment, for the American Skein & Fdry. Co.

(Continued on page 50)

Changes in Membership

NEW MEMBERS

Applications Received January 1 to 31, 1945

★ *denotes military service*

Allen, Claris, Prin. Asst. Engr., Indianapolis Water Co., Box 855, 113 Monument Circle, Indianapolis 6, Ind. (Jan. '45)

B.C. Concrete Co., Ltd., A. W. G. Clark, 1025 W. 77th Ave., Vancouver, B.C., Can. (Assoc. M. Jan. '45)

Barr, M. C., Dist. Mgr., Public Service Co. of Indiana, Inc., Rochester, Ind. (Jan. '45)

Benedum, Burtis A., Supt., Las Flores Water Co., 428 Sacramento St., Altadena, Calif. (Jan. '45)

Bounds, George L., Chemist, Bottlers' Service Dept., The Coca-Cola Co., Drawer 1734, Atlanta 1, Ga. (Jan. '45)

Brennan, John R., Supt., Elizabeth Township Authority, Buena Vista, Pa. (Jan. '45)

Bubbis, Nathan S., Engr. of Water Works & Sewerage, City of Winnipeg, Ross & Tecumseh, Winnipeg, Man., Can. (Jan. '45)

Cameron, J. W., Engr. of Tests, Wheeling & Lake Erie Ry. Co., Brewster, Ohio (Jan. '45)

Campbell, Garnet H., Chief Operator, Water Filtration Plant, 214 N. Riverside Ave., St. Clair, Mich. (Jan. '45)

Churchill, J. W., Chief Accountant, Halifax Public Utilities Com., 140 Roy Bldg., Halifax, N.S., Can. (Jan. '45)

Clark, A. W. G., *see* B.C. Concrete Co., Ltd.

(*Continued on page 28*)

(*Continued from page 24*)

Cleary, Edward J., Mng. Editor, *Engineering News-Record,* 330 W. 42nd St., New York 18, N.Y. (Jan. '45)

Coleman, John A., Sr. Engr., New York Water Service Corp., 367 White Plains Rd., White Plains, N.Y. (Jan. '45)

Cunningham, Wm. A., Prof. of Chem. Eng., Univ. of Texas, 310 Chemical Engineering Bldg., Austin 12, Tex. (Jan. '45)

Davis, Jack W., Denver Dist. Engr., Johns-Manville Corp., 618 Continental Oil Bldg., Denver 2, Colo. (Jan. '45)

Diehl, F. D., Supt. of Water & Elec. Dept., 111 S. Main St., McPherson, Kan. (Jan. '45)

Donat, A. H., Chief Engr., Water Plant, Vicksburg, Miss. (Jan. '45)

Dowe, Ray M., Constr. Engr., Water Div., District of Columbia, 14th & E Sts., N.W., Washington 4, D.C. (Jan. '45)

Elliott, Earl C., Jr., Purchasing Agent, California Water Service Co., 374 W. Santa Clara St., San Jose 8, Calif. (Jan. '45)

Erickson, E. T., Chem. Engr., Dearborn Chemical Co., 310 S. Michigan Ave., Chicago 4, Ill. (Jan. '45)

Fischer, Robert A., Supt. of Water Works, City of Covington, Ky., Filtration Plant, Alexandria Park, Ft. Thomas, Ky. (Jan. '45)

Geary, Wm. J., Mgr., Public Water Supply Dist. No. 1 of Clay Co., 206 National Bank Bldg., North Kansas City, Mo. (Jan. '45)

Grant, Wallace, Chemist, West Virginia Water Service Co., 309—16th St., S.E., Charleston 4, W.Va. (Jan. '45)

Ground, Earl H., City Clerk, Goodland, Kan. (Jan. '45)

Harvill, Henry J., Asst. Supt. of Filtration Plant, Central Power & Light Co., Box 1071, Laredo, Tex. (Jan. '45)

Hastings, F. Coolidge, Jr., Engr., Turbine Equipment Co., 75 West St., New York, N.Y. (Jan. '45)

Hatfield, Lawrence G., Chemist, W. H. & L. D. Betz, 37 W. Van Buren St., Chicago 5, Ill. (Jan. '45)

Healy, William A., Director, Div. of San. Eng., State Health Dept., State House, Concord, N.H. (Jan. '45)

(*Continued on page 30*)

(*Continued from page 28*)

Hernandez de la Barca, Aurelio R., Chief Bacteriologist, Sta Clara Sewage Plant, Public Works, Luis Estevez No. 23, Sta Clara, Cuba (Jan. '45)

Hope, Malcolm C., P. A. San. Engr., Div. of San. Eng., U.S. Public Health Service, 2000 Massachusetts Ave., N.W., Washington, D.C. (Jan. '45)

Janota, Joseph, Research Chemist, Victor Chemical Works, 11th & Arnold Sts., Chicago Heights, Ill. (Jan. '45)

Jones, Frederick S., Special Repr., A. D. Cook, Inc., 130 W. 42nd St., New York 18, N.Y. (Jan. '45)

Kane, William E., Salesman, Salina Supply Co., 107 E. Wilson, Salina, Kan. (Jan. '45)

Kline, J. D., Designing Engr., Halifax Public Utilities Com., 311 Roy Bldg., Halifax, N.S., Can. (Jan. '45)

Knauer, Charles W., Field Engr., Fairbanks, Morse & Co., 80 Broad St., New York 4, N.Y. (Jan. '45)

Larchmont, Village of, Arthur Richards, Supt., Public Works, Larchmont, N.Y. (Corp. M. Jan. '45)

Lazard, Paul J., Chief of Public Utilities, French Supply Council, 1330—18th St., N.W., Washington, D.C. (Affil. Jan. '45)

Lee, Robert B., Supt. of Water Works, City Hall, Bedford, Ind. (Jan. '45)

Lewis, Harry, Vice-Pres., Varner Well Drilling Co., 905 Dubuque Bldg., Dubuque, Iowa (Jan. '45)

Logsdon, J. L., Gen. Mgr., Pacific Coast Factory, Mueller Co., 2801 E. 12th St., Los Angeles, Calif. (Jan. '45)

(*Continued on page 32*)

(*Continued from page 30*)

Lowry, M. Louise (Mrs.), Lab. Aide, Post Eng., Susquehanna Ordnance Depot, 21 S. Main St., Muncy, Pa. (Jan. '45)

Malone, Harold L., Asst. Engr., State Health Dept., Oklahoma City, Okla. (Jan. '45)

Malony, W. L., Cons. Engr., Symons Bldg., Spokane, Wash. (Jan. '45)

Marek, Glenn E., Asst. Supt. & Purchasing Agent, Water Dept., 323—4th St., S.E., Rochester, Minn. (Jan. '45)

Mason, Warren L., Lab. Asst., Water Dept., Allison Div., General Motors Corp., 817 Kappes, Indianapolis 3, Ind. (Affil. Jan. '45)

McBurnie, Wm. J., Comr., Garden City South Water Dist., 7 Andover Pl., Cathedral Gardens, West Hempstead, N.Y. (Affil. Jan. '45)

McLean, R. E., R. E. McLean Tank Maintenance Co., Box 1062, Gastonia, N.C. (Jan. '45)

McPherson, Murray B., Lt., Sn.C., Post Sanitation Officer, Ft. Hancock, N.J. (Apr. '44)★

Mehlburger, Max A., Cons. Engr., 1018 Pyramid Bldg., Little Rock, Ark. (Jan. '45)

Mitchell, Ansel N., Partner, Tanner & Mitchell, Architect-Engrs., 310 Ward Parkway, Kansas City 2, Mo. (Jan. '45)

Nassau County Dept. of Public Works, W. Fred Welsch, Sr. Engr., Old County Court House, Mineola, N.Y. (Corp. M. Jan. '45)

Niles, Philip B., *see* Water Works Service Co.

(*Continued on page 34*)

(*Continued from page 32*)

O'Leary, E. C., Operating Engr., Halifax Public Utilities Com., 311 Roy Bldg., Halifax, N.S., Can. (Jan. '45)

Paterson, A. M., Chief Engr., Bristol Waterworks Co., Telephone Ave., Bristol, England (Jan. '45)

Payne, David W., Supt., Water Dept., Box 384, Oroville, Wash. (Jan. '45)

Peterson, Carl J., Pump & Filter Plant Foreman, Box 809, Great Falls, Mont. (Jan. '45)

Pettis, C. R., Engr., Ohio Water Supply Board, 1651 Wyandotte, Columbus 8, Ohio (Jan. '45)

Pierce, E. W., Sales Mgr., Peerless Pump Div., Food Machinery Corp., Box A, Station B, Canton, Ohio (Jan. '45)

Richards, Arthur, *see* Larchmont, Village of

Richardson, Dick, Service Mechanic, Water Dept., 1051—56th Ave., S.E., Portland 15, Ore. (Jan. '45)

Rooney, William J., Supt. of Filtration Plant, FPO 1506, New York, N.Y. (Jan. '45)

Rucker, Raymond H., Asst. Supt. of Distr., Indianapolis Water Co., 113 Monument Circle, Indianapolis, Ind. (Jan. '45)

Saunders, R. R., Water Supt., City Water Works, Grinnell, Iowa (Jan. '45)

Stauffer, S. Walter, Pres., National Lime Assn., 927—15th St., N.W., Washington 5, D.C. (Jan. '45)

Stephenson, Robert J., Asst. Water Supply Engr., Dept. of Transport, 706 Tegler Bldg., Edmonton, Alta., Can. (Jan. '45)

Sussman, Sidney, Chief Research Chemist, The Permutit Co., Birmingham, N.J. (Jan. '45)

(*Continued on page 36*)

(*Continued from page 34*)

Tanner, William S., Engr., The E.L.E. Co., 124 W. 4th St., Los Angeles 13, Calif. (Jan. '45)

Taylor, Elbert J., Resident Engr., Morris Knowles, Inc., 23B Franklin Park, Philadelphia 38, Pa. (Jan. '45)

Thompson, T. H., Jr., Chemist, Bottlers' Service Dept., The Coca-Cola Co., Drawer 1734, Atlanta 1, Ga. (Jan. '45)

Van Dorp, George J., Comr., Div. of Water, 2183 Broadway, Toledo 9, Ohio (Jan. '45)

Varner, C. W., *see* Varner Well Drilling Co.

Varner Well Drilling Co., C. W. Varner, Pres., 905 Dubuque Bldg., Dubuque, Iowa (Assoc. M. Jan. '45)

Water Works Service Co., Philip B. Niles, Asst. Vice-Pres., 50 Broad St., New York 4, N.Y. (Corp. M. Jan. '45)

Welsch, W. Fred, *see* Nassau County Dept. of Public Works

Young, N. Peyton, Town Engr., Town Hall, Falls Church, Va. (Jan. '45)

REINSTATEMENTS

Cederberg, C. Ray, Dist. Mgr., Wallace & Tiernan Co., Inc., 1420 Dahlia St., Denver 7, Colo. (June '29)

(*Continued on page 38*)

(*Continued from page 36*)

Reynolds, R. W., Supt., West Palm Beach Water Co., Box 1311, West Palm Beach, Fla. (Nov. '26)

Storms, Thompson A., Western Repr., R. D. Wood Co., 155 N. Clark St., Chicago, Ill. (Mar. '34)

Young, Kenneth, Asst. Engr., Metropolitan Utilities Dist., 18th & Harney, Omaha 2, Neb. (Jan. '41)

Windsor Utilities Com., S. H. Gillett, 607 Canada Bldg., Windsor, Ont., Can. (Corp. M. Apr. '31)

LOSSES

Deaths

Howard, Charles D., Director, Div. of Chemistry & Sanitation, State Board of Health, State House, Concord, N.H. (Feb. '21)

Lyman, William J., Southern Sales Mgr., National Cast Iron Pipe Co., Box 2542, Birmingham 2, Ala. (Jan. '36)

O'Brien, Denis F., A. P. Smith Mfg. Co., East Orange, N. J. (Jan. '35) *Honorary M. '35. Director '30–'39, '40–'43.*

Pomfret, Nelson A., Watershed Supervisor, North Jersey Dist. Water Supply Com., Wanaque, N.J. (Oct. '40)

Wilcox, William F., Mech. Engr., Box 698, Atlanta 1, Ga. (Sept. '93) *M*

Resignations

American Valve Mfg. Co., William J. White, Supt., 170 Mansion St., Coxsackie, N.Y. (Assoc. M. Oct. '43)

Baker, Chester L., Vice-Pres., Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa. (Jan. '39) *M*

Brumbaugh, W. V., Secy., National Lime Assn., 927—15th St., N.W., Washington 5, D.C. (Mar. '29)

Chemical Process Co., G. F. Mills, Research Director, 563 Second St., San Francisco 7, Calif. (Assoc. M. Oct. '43)

Chenery, Charles M., Pres. & Treas., New York Water Service Corp., 90 Broad St., New York 4, N.Y. (Apr. '40) *M*

Cleverdon, Walter S. L., 33 Deshon Ave., Bronxville 8, N.Y. (Apr. '16)

Daniels, Paul I., Land Agent, East Bay Munic. Utility Dist., 512—16th St., Oakland 12, Calif. (May '33) *M*

(*Continued on page 40*)

(Continued from page 38)

Dellone, Fred, Jr., Dellone Construction Co., Thomas Bldg., 1316 Wood St., Dallas 1, Tex. (Apr. '40)

Deseronto Public Utilities Com., S. C. Hughes, Supt., Water Dept., Deseronto, Ont., Can. (Corp. M. Jan. '37)

Dill, W. N., Mgr., Mueller Co., Pacific Coast Factory, 2801 E. 12th St., Los Angeles 23, Calif. (July '38)

Dumas, Armand, Town Mgr., Box 90, Malartic, Que., Can. (Jan. '43)

Edwards, C. H., Chief Chemist, Wheeling & Lake Erie Ry. Co., Brewster, Ohio (Oct. '43)

Ferguson, S. F., Cons. Engr., 11 Hill St., Newark 2, N.J. (Apr. '37)

Finley, Lester, Gen. Foreman, California Oregon Power Co., 1103 Upham St., Klamath Falls, Ore. (Jan. '41)★

Fisher, Frank, Sr., Supt., Water Works, Clarence, Iowa (July '43)

Flanagan, Walter H., Sales Engr., Standard Lime & Stone Co., 630 N. Elm St., Greensboro, N.C. (July '40) ★

Fulton, Angus Anderson, Hydr. Engr., Scotland Hydro-Elec. Board, Edinburgh, Scotland (Oct. '37)

Guyton, William F., Assoc. Hydr. Engr., U.S. Geological Survey, 531 Federal Bldg., Louisville 2, Ky. (Apr. '42)

Hotchkiss, Henry T., Supervising Chemist, Larchmont, N.Y. (July '35)

Kirk, Lawrence H., Service Engr., The Flox Co., Inc., 1409 Willow St., Minneapolis 4, Minn. (Apr. '39)

(Continued on page 42)

(*Continued from page 40*)

Knoedler, H. A., Western Mgr., Inertol Co., Inc., 64 S. Park, San Francisco 7, Calif. (Oct. '37)

Korff, Frank, Chief Engr., Tonawanda Water Works, Chestnut St., Tonawanda, N.Y. (Apr. '40) *MP*

Laase, William F., 871 Main St., Lewiston, Me. (May '24)

Leverin, Harald A., Wolfville, N.S., Can. (Jan. '36)

Maher, John C., Assoc. Geologist, U.S. Geological Survey, 217 Federal Bldg., Tulsa, Okla. (Oct. '43)

Moon, James N., Water & Sewer Supt., Borough of Media Water Dept., Borough Hall, Media, Pa. (Jan. '43) *MP*

Olin, Hubert Leonard, Prof. of Chem. Eng., Univ. of Iowa, Iowa City, Iowa (Apr. '40) *P*

Pittsburgh Equitable Meter Co., James L. Austin, 400 N. Lexington Ave., Pittsburgh 8, Pa. (Assoc. M. June '98)

(*Continued on page 44*)

(*Continued from page 42*)

Plamondon, Sarto R., Engr., 103 Pere Marquette St., Quebec, Que., Can. (Jan. '41)

Pletcher, R. H., Supt. Elizabeth Township Authority, Box 164, Buena Vista, Pa. (July '43) *P*

Preload Co., The, James R. White, 420 Lexington Ave., New York 17, N.Y. (Assoc. M. July '43)

Rebsamen, Lloyd M., Mgr., City Water & Light Plant, Jonesboro, Ark. (Jan. '34) *AMP*

St. Clair, City of, Garnet H. Campbell, Water Works Operator, 214 N. Riverside Ave., St. Clair, Mich. (Corp. M. Apr. '44)

Sheldon, Horace A., Comr., Port Jervis, N.Y. (Apr. '31)

Sloat, Harry M., Eng. Aide, Dept. of Water & Power, 746 S. Coronado St., Los Angeles 5, Calif. (Oct. '43) *P*

Solomon, Gabriel R., c/o Mountain Lake Club, Lake Wales, Fla. (Nov. '25)

(*Continued on page 46*)

(*Continued from page 44*)

Strobel, W. E., Supt., Sewer & Water Utility, Lomira, Wis. (July '44) *M*

Toms, N. S., Cons. Engr., 25 Wetmore Ave., Morristown, N.J. (Apr. '43) *MP*

Trimble, Roswell D., R. D. Trimble & Co., Cons. & Constr. Engrs., R.F.D. 13, Richmond 21, Va. (July '37)

Warren, Chester A., Assoc. Engr., Bureau of Water Supply, 1633 N. Caroline St., Baltimore, Md. (May '22)

Watson, Hazen E., Asst. Mech. Engr. Detroit Water Board, 9300 W. Jefferson Ave., Detroit 17, Mich. (Affil. July '40)

Wyant, Carl, 141 San Ysidro Rd., Santa Barbara, Calif. (Mar. '24)

Changes in Address

Changes of address between January 15, 1945 and February 15, 1945

Ackerman, Arthur P., Goin Lane, Alpine, N.J. (Apr. '43)

American Water Works & Electric Co., Earle S. Thompson, Pres., 50 Broad St., New York 4, N.Y. (Corp. M. June '15)

Avrett, W. L., Jr., 478 N. Highland Ave., Atlanta, Ga. (Apr. '36) ★

Biggs, George W., Jr., Vice-Pres., Water Works Service Co., 50 Broad St., New York 4, N.Y. (June '16)

Blue, J. R., Supervisor of Water & Sewers, 411 S. Jefferson St., Perry, Fla. (July '44)

Browning, C. R., Cons. Engr., Box 336, Tustin, Orange County, Calif. (Nov. '32)

Burnett, B. Julian, Pres., Burnett Chemical Co., 711 S. Main St., Jacksonville 7, Fla. (July '44) *P*

Carollo, John A., Constr. Engr., Headman, Ferguson, Carollo & Classen, 325 Ellis Bldg., Phoenix, Ariz. (Jan. '39)

Chapman, Gilbert W., *see* Community Water Service Co.

Community Water Service Co., Gilbert W. Chapman, 50 Broad St., New York 4, N.Y. (Corp. M. Jan. '27)

Covell, Earl D., 160 East Ave., N., Battle Creek, Mich. (Jan. '44)

Donald, E. R., Pres., Citizens Water Co., 416 N. 3rd St., Harrisburg, Pa. (Oct. '44)

(*Continued on page 48*)

(Continued from page 46)

Dougherty, E. R., Supervising Chem. Engr., 3453 N. Bancroft Ave., Indianapolis 44, Ind. (Affil. Jan. '43) *P*

Febry, Wm. E., Distr. Supt., Wisconsin Power & Light Co., 1146 Oak St., Beloit, Wis. (Jan. '41) *M*

Fox, Robert H., 375 Main St., Centerville, Ohio (Affil. Jan. '41) *M*

Gillett, S. H., *see* Windsor Utilities Com.

Hiskey, D. R., Chem. Engr., Dearborn Chemical Co., 807 Mateo St., Los Angeles 21, Calif. (Apr. '42) *P*

Jodaitis, Ladislaus T., P.A. Engr. (R), U.S. Public Health Service, 172 Sherman St., Gardner, Mass. (July '43) *P*

Kegebein, John F., Jr., 742 Washington Park, Norfolk 7, Va. (Apr. '41) *P*

Kerr, S. Logan, Hydr. Engr., 36 Westview St., Philadelphia 19, Pa. (Jan. '35) *M*

Lawrence, R. E., Cons. Engr., 1831 W. 49th Terrace, Kansas City, Mo. (May '28) ★

Lill, John R., 719 N. Milton Ave., Baltimore, Md. (Apr. '43) *P*

Mabee, William C., Retired Engr., 3637 Winthrope Ave., Indianapolis 5, Ind. (Dec. '24) *Director '36–37. Diven Medal '38. Fuller Award '38. MP*

Marx, George W., Director, San. Eng. Div., State Dept. of Health, Capitol Bldg., Phoenix, Ariz. (Jan. '44) *MP*

Nichols, R. H., Water Control Station Engr., Seattle Water Dept., 4437—40th Ave., S.W., Seattle 6, Wash. (July '44)

Shephard, Robert O., 2716—7th St., Meridian, Miss. (Jan. '43) *M*

Smith, Gilbert M., Sr. Engr., AAF Annex 1, Gravelly Point, Washington 25, D.C. (Oct. '41)

Staley, H. H., 3226 Milburn, Houston 4, Tex. (July '38)

Thompson, Earle S., *see* American Water Works & Electric Co.

Vaseen, V. A., Lt., San. Engr., Station Hospital, Lake Charles Air Base, La. (Jan. '44) *MP* ★

Wagner, Edward P., Lt. Comdr., 299 Madison Ave., New York, N.Y. (Jan. '37) ★

Whitehead, Robt. T., Salesman, Mueller Co., 6229 Juniata St., St. Louis 9, Mo. (Oct. '44)

(*Continued from page 20*)

The Midwest Research Institute is a newly-formed organization that has recently inaugurated a number of projects in its laboratories in Kansas City, Mo. Harold Vagtborg, former Director of the Armour Research Foundation, Chicago, is its President, and included in the group of 100 trustees is Dr. Edward R. Weidlein, Director of the Mellon Institute of Industrial Research, Pittsburgh, who has been an Active Member of the A.W.W.A. since 1924. The activities of the Institute will cover chemistry; physics; metallurgy; mineralogy; biology; bacteriology; chemical, civil, electrical and mechanical engineering; and other fields of science and science application.

The 1944 A.S.M.E. Mechanical Catalog and Directory is now available for distribution from the A.S.M.E. at 29 West 39th St., New York. Its contents include specification-type data, about 2000 product descriptions supplied through the co-operation of manufacturers who subscribed for space. The volume, which is indexed and cross-indexed, covers approximately 4,000 manufacturers' products.

(*Continued on page 54*)

(*Continued from page 50*)

Springs command the attention of *Sparling Metrograms* for November 1944. R. W. Sparling, water meter manufacturers who issue it, have found that springs can sometimes be colossal producers of water. Mammoth Spring, Ark., produces 13 mgd. and the 18 acres surrounding it give 864 mgd. The largest such group, however, is the string of springs feeding the Snake River in Idaho, with 5,100 mgd. A group in California, feeding the Fall River, produces 900 mgd.

Some thermal springs are large producers too, *Sparling Metrograms* has found. There are 65 in the U.S. averaging 65 mgd. or more, while there are thousands delivering 0.65 to 6.5 mgd., their water being 65°F. or more. Warm Spring, Mont., discharges 115 mgd.

Sparling Metrograms cites as its source the U.S.G.S. Water Supply papers 557, 679 and 774.

The Foxboro Co., Foxboro, Mass., has announced the appointments of Frank Renner to the staff of Sales Engineers covering the southern California territory out of Los Angeles, and Robert Beers to the New-York-New Jersey territory with headquarters in New York.

(*Continued on page 56*)

(*Continued from page 54*)

The Hays Mfg. Co., Erie, Pa., was awarded the Army-Navy "E" on Oct. 24, 1944, for high achievement in making badly-needed materials of war. Col. E. A. Lynn, Dist. Chief, Cleveland Ordnance Dist., A.S.F., said, in making the award, "A long established and highly developed system of unified manufacturing control, together with the fine co-operative spirit of the employees, enabled Hays to convert rapidly from its peacetime manufacturing program. In addition to an excellent war production record, Hays has been able to supply such materials as stops and fittings for water works, gas service and widely varied applications in practically every branch of industry."

The award coincides with Hays' celebration of its seventy-fifth anniversary as a manufacturer of brass, copper, lead and iron water works products.

O. V. Lindell has been transferred from the Kansas City to the Chicago office of the Dorr Co. and appointed Mgr. of the Central Territory. The office in Kansas City will continue to serve the Southwest.

(*Continued on page 58*)

(*Continued from page 56*)

Four chlorinators produced by Wallace & Tiernan Co., Newark, N.J., were included in the first equipment other than weapons in operation on the bullet-swept beaches of Normandy last summer.

Soon after reconnaissance squads of the Engineer Combat Battalion, charged with the mission of purifying water, located a small stream, machinery was in operation. The chlorinators (named Sally, Marian, Kathryn and Sue, after the soldier-operators' wives) pump 15 gal. of unpurified water per minute, adding soda ash, alum, calcium hypochlorite and other chemicals. The water travels through the chlorinators into filters where it passes through fifteen different sizes of sand and gravel. The filter machines set a purified-water production record of 40,000 gpd. The average American soldier consumes at least a one-quart canteen of water each day.

Charles W. Springer, former Sales Mgr., Barrel Div., Jones & Laughlin Steel Co., and a representative of the Chicago Bridge & Iron Co., has been appointed Mgr. of Eastern Sales by the Graver Tank & Mfg. Co., Inc., of East Chicago, Ind. Springer will direct all of Graver's East Coast sales activities from company offices at 424 Madison Ave., New York 17, N.Y.

NEWS OF THE FIELD

Carl H. Chatters, Executive Secretary of the Municipal Finance Officers Association, Chicago, published the following editorial in the February issue of *Municipal Finance,* under the heading, "Home Rule, States' Rights and Federal Aid":

If home rule for local governments means only the right to get along without revenues and without any kind of help from the state, then home rule is an empty fiction and ought to be replaced by some philosophy of government that concedes that localities have a job to do and are entitled to the money with which to do it. If states' rights and state sovereignty mean that the state will accept no responsibility for its localities but will at the same time make it necessary for them to seek federal financial and administrative assistance, then it is time to stop discussing states' rights and state sovereignty and talk about a relationship which the local governments are actually required to perform. If federal aid is the vehicle for letting the states slide out from under their responsibility and the localities from assuming obligations which they can readily bear, then pious talk about home rule and states' rights should cease and the local governments should admit their only hope lies in looking toward Washington and not toward their state capitals. . . .

There is still a place in the United States for a philosophy of home rule and the practice of state responsibility. Home rule should mean the right of the localities to determine local matters within the scope of general acts passed by the state legislature. The citizens of a locality are also citizens of the state and the state cannot shirk its responsibility for providing adequate local revenues merely by saying that the state needs the money for its own use, or that it has no constitutional power to share with the localities. Constitutions, both federal and state, were made to preserve the rights of individual citizens and they were not intended to be the primary obstacle to the meeting of human needs. Rather, they were intended originally to guarantee freedom and equal opportunity for all citizens. . . .

Let's get straight on this question. The local governments should have the revenues or the authority necessary to finance the activities that are imposed on them. They cannot appropriately ask the state or federal governments to give them money until they have made an honest effort to raise local revenues in a reasonable way and at reasonable rates. Meanwhile the states should grant necessary fiscal authority to the localities; the states should share certain types of revenues; and the states should not take away, by constitution or statute, the means by which local governments can finance desirable and necessary activities. Finally, when the localities have made the best use of their resources and the states have given localities both authority and money, then the federal government may appropriately participate in state and local financing *provided there is a national issue involved* [editor's italics] and the federal acts do not stimulate or require unreasonable local or state expenditures.

Anyway, let us get straight on fundamentals and stay straight.

(*Continued on page 2*)

(*Continued from page 1*)

Harvey S. Howe, former Deputy Director of the Water Div., Office of War Utilities, WPB, has joined the Lock Joint Pipe Co., Ampere, N.J., as Assistant to the Vice President. Before going to Washington, Howe was Chief Engr., Scranton-Spring Brook Water Service Co., Scranton, Pa.

Walter L. Leach, formerly Chief of the Materials Distribution Section, has succeeded Howe as Deputy Director of the Water Div.

Charges against J. Grant Frye, Counselor-at-Law and Attorney for the City of Illmo, Mo., have been dismissed by the judge at Nashville, Tenn., upon the recommendation of the District Attorney General who refused to prosecute the case further. Frye had been indicted by the grand jury in Nashville for extortion and for criminal libel, upon complaint made on behalf of Mr. and Mrs. William A. Riley of the Dixie Tank and Bridge Company. He was tried on the extortion charge and the jury rendered a verdict of guilty. The trial judge set aside the jury's verdict and granted a motion for a new trial. When the question arose of setting the date for the second trial, the District Attorney General advised that he would not pursue the matter further. Later the charge of libel was also dismissed.

Frye will be remembered in water works circles for his article on "Battling the Tank Repair Racket" which appeared in the December 1943 JOURNAL.

Capt. James K. Latham, Sn.C., Chief of the Sanitary Branch of the American Armed Forces in the United Kingdom, recently discussed the engineering aspects of "Public Health Administration in the United States," before the Sanitary Inspector's Association, London. Captain Latham in civilian life is a member of the firm of Howard K. Bell, Cons. Engrs., Lexington, Ky., specialists in water and sewage works design.

Frank E. Willey, former Supt. of the Lawrence, Kan., Water Dept., has been appointed Production Engr. in the Topeka Water Dept. He succeeds the late Daniel H. Rupp, who was killed by a train on October 23, 1944.

(*Continued on page 4*)

(*Continued from page 2*)

James D. Donovan, Manager of Production and Distribution, Board of Public Utilities, Kansas City, Kan., died of a heart attack last November at the age of 59. Mr. Donovan had under his jurisdiction the Kansas City municipally-owned and -operated utilities—water, light, power, radio and airport. He was an Active Member of the A.W.W.A. and at the time of his death was serving his third term as President of the American Public Power Association. He was also a member of the Kansas Development Commission and Chairman of the Kansas City Chamber of Commerce Postwar Planning Committee.

Arthur P. Miller, Sr. San. Engr., U.S. Public Health Service, has terminated his duty in the Coast Guard and returned to the U.S.P.H.S. He is now assigned to the San. Eng. Div., Washington 14, D.C. He was for a number of years in charge of U.S.P.H.S. Dist. No. 1, with headquarters at 15 Pine St., New York City.

(*Continued on page 6*)

(*Continued from page 4*)

On April 1, the Water & Sewage Works Manufacturers Assn. moved from 12 East 41st St., New York 17, to 170 Broadway, New York 7.

These new quarters are at the address of the first official "Office of the Secretary" of the A.W.W.A. In March 1924, the Association had outgrown the space which Secretary John M. Diven provided at his own residence, and he was authorized by the Board of Directors to rent an office at 170 Broadway, New York City. A.W.W.A. headquarters remained there until April 1928, when they were moved to the Engineering Societies Building, 29 West 39th St. In January 1938, larger quarters were taken in the Johns-Manville Building, 22 East 40th St., and in March 1943, that space was outgrown and a still larger office was leased for five years at 500 Fifth Avenue.

Edward A. Bell, former Borough Engr., Essex Falls, N.J., was recently promoted to a full lieutenancy in the Naval Reserve, and is posted in the Superintending Civ. Engr.'s Office in the Alaska Div. of the Navy Dept., Bureau of Yards and Docks, Seattle.

Hugh S. Dewey, A.W.W.A. Director for the New York Section, has been appointed President of the Western New York Water Co., Buffalo, to succeed Charles M. Chenery of New York City. Dewey had been Vice-President of the company since 1930. A native of Rochester, he was formerly an executive of the Rochester and Lake Ontario Water Service Corp. He is a graduate of the University of Rochester.

The Western New York Water Co. is a subsidiary of the New York Water Service Corp., of which Chenery is President. The latter company is in turn owned by the Federal Water Service Corp., of which Chenery's brother, Christopher T. Chenery, is President.

Major C. Hagar, former Supt. of the Boonville, Mo., Water Dept., assumed the duties of the Supt. of the Water Dept. at Lawrence, Kan., on January 1. Hagar left his Boonville post in 1942 to do war work in Pennsylvania. He returned to Missouri in 1944 because of ill health and served with the Malaria Control Unit of the U.S.P.H.S. at Canithersville, Mo., before going to Lawrence.

(*Continued on page 8*)

(*Continued from page 6*)

The "Ohio Section News" quoted in its February number the following press release, sent by W. H. Stoneman from Aachen to the Chicago Daily News on November 15:

It is the job of the United States Army Air Force and the Royal Air Force, and of our artillerymen, to knock down German towns and to make them unfit for human habitation. It is the job of Major M. W. Tatlock, Dayton, Ohio, to undo their work.

Machine guns were still sputtering in Aachen's outskirts when Major Tatlock drove into the city and began to ransack the rubble in search of enough public utilities to make life livable for the remaining population.

He found the water pumping station intact, together with two good reservoirs. He also found the local electric power station intact. The gas system, alone of the three most vital public utility plants, was ruined. Even the local sewage disposal system will be capable of functioning when the sewers have been put back in order.

The "Ohio Section News" comments that "the Dayton sewage plant blew up a few years ago and Major Tatlock had to dig it out of the wreckage," so blasted works were not new to him.

(*Continued on page 10*)

(*Continued from page 8*)

Gossip of municipal activities reported in a recent issue of Public Management tells that:

Waco, Texas, is now making sewer service charges on its water bills. Charges range from 30 cents for one or two fixtures in a private home to $1.00 for one or two fixtures in a commercial location, with sliding scales for additional fixtures and other classes of installations. Sewer services outside the city limits bear a surcharge of 50 per cent. The city may disconnect sewer services for failure to pay in 20 days.

Youngstown, Ohio, has inaugurated a 3 per cent tax on net billings for electricity, natural gas, water and local telephone service, which is expected to raise $300,000 per year to provide for garbage collection and disposal, the purchase of fire fighting apparatus and street department trucks, and a reserve fund for postwar projects. The new tax, modeled on a 5 per cent utility tax in Columbus, Ohio, takes the place of a 50-cents per month garbage collection charge, which yielded approximately $90,000 per year.

Auburn, N.Y., has decided upon charges for sewer, fire and water services outside of the city. Five-hundred dollars will be charged for each

(*Continued on page 12*)

(*Continued from page 10*)

sewer installation, plus $7.50 per year per dwelling for sewage treatment. Fire protection will be given only to those neighboring communities contracting for it with the city. Water will be charged at the increased rate of $2.30 for the first 1,000 cu.ft. per month on individual meters, and $1.05 per 1,000 cu.ft. per month on master meters. Ten per cent penalty is made on non-payment within ten days. Thirty-five dollars per year is charged for each hydrant outside the city limits. Removing or installing meters is charged at the rate of $2.00 per call.

Coos Bay and *North Bend, Ore.,* are undertaking, by a vote of their citizens, to set up a joint ownership and operation of the water utility now serving both towns.

Bradenton, Fla., and *Marquette, Mich.,* now bill for utility services by post card.

Sweet Home, Ore., has raised its water rates to consumers outside the city limits. The charges are now $.75 per 100 cu.ft., with a minimum of $6.25 per month.

Yakima, Wash., has a sewage disposal plant operated by its water department, so instead of adopting sewer rentals, the city increased its water rates 20 per cent.

One-hundred-forty-three municipalities in Alabama, Georgia, Kentucky, Mississippi, North Carolina and Tennessee use the services of the Central Service Association which prepares bills for electric and water utilities.

John L. Sybrandt, Chicago, who recently retired as Sales Repr. of the Ludlow Valve Mfg. Co., after 39 years' affiliation with the company, has been appointed purchasing agent, civilian status, in the headquarters of the 9th Naval District, Chicago. Sybrandt's activities cover the purchase of pumping equipment, air compressors, heat treating furnaces, hydraulic equipment and electrically-operated power units, to fill naval requirements all over the world.

(*Continued on page 14*)

(*Continued from page 12*)

Edmund A. Pratt has been appointed Director of the Inter-American Dept. of the American Standards Assn., New York. The department was organized two years ago to implement a program of inter-American co-operation on standardization, and since then it has established close contacts with the national standardizing bodies in Brazil, Mexico, Argentina and Uruguay, and with technical groups interested in industrial and technical standards in other countries. Pratt is a civil engineer who has had experience in Europe, Asia and Africa, as well as in the Western Hemisphere. Most recently he was Project Mgr. for Pan-American Airways, Inc., in charge of construction of a group of military airports in Brazil.

Capt. Charles E. Richheimer, Sn.C., has been posted as San. Engr. for the Army Air Force Miami Beach Service Base, the unit taking care of all AAF and Army Ground Forces installations at Miami Beach, Fla. He has recently completed a six-month assignment in Brazil with the Office of the Co-ordinator of Inter-American Affairs. He was working on the Amazon with headquarters at Belém. He also served for nine months as San. Officer at Daniel Field, Ga.

(*Continued on page 16*)

(*Continued from page 14*)

A graduate of Massachusetts Institute of Technology, class of 1928, Captain Richheimer is now a partner, in charge of the utilities section, of Reynolds, Smith and Hills, Cons. Engrs., and a partner also in the firm of G. A. Youngberg & Assocs., Cons. Civ. Engrs., both of Jacksonville, Fla.

William W. Hurlbut retired on March 31 from his post as Chief Engr. of Water Works and Deputy Gen. Mgr. of the Los Angeles Dept. of Water & Power. He had been associated with the department for over 37 years.

Hurlbut was President of the A.W.W.A. in 1937, and was made an Honorary Member in 1943. He is a Diven Medalist and a Fuller Award recipient, and has served two terms as a Director. He continues as Chairman of the Committee on Steel Plate Pipe, which has, under his leadership, issued seven sets of specifications covering fabrication of pipe and coatings and linings.

The Michigan Conference on Water Purification will sponsor a Continued Education Course for Water Works Personnel at the School of Public Health, University of Michigan, on May 22–24. Included among

(*Continued on page 18*)

750,000 gal. Horton radial-cone bottom tank with tubular columns in Kalamazoo, Mich., waterworks.

(*Continued from page 16*)

the speakers will be Hobart H. Willard, Prof. of Chem., Univ. of Mich.; H. A. Faber, Research Chemist, The Chlorine Institute, New York; N. S. Chamberlin, Wallace & Tiernan Co., Inc., Newark, N.J.; G. P. Vincent, The Mathieson Alkali Works, Inc., New York; R. D. Bates, Dist. Engr., New York State Dept. of Health; Maj. A. M. Buswell, Chief, State Water Survey, Urbana, Ill.; R. L. Starkey, Rutgers Univ., New Brunswick, N.J.; A. H. Wieters, Iowa State Dept. of Health; and Dr. Trendley Dean, U.S. P.H.S., Bethesda, Md.

The first day's sessions will be devoted to the chemistry of chlorine treatment of water. The second day will offer lectures on the chemistry and microbiology of iron in water and fluorine and fluoride in water will be discussed on the third day.

Graham Walton, P.A. San. Engr. (R), U.S.P.H.S., has been assigned as San. Engr. Consultant to the Bureau of Prisons, attached to the Dept. of Justice, Washington, D.C. He was formerly associated with the U.S.P.H.S. Dist. Office, Denver, Col., and was subsequently San. Engr. Consultant to the FPHA, San Francisco.

(*Continued on page 20*)

(*Continued from page 18*)

Governmental units in the United States were recently summarized in the following table, quoted from a pamphlet, "The Units of Government in the United States," by William Anderson, revised and published by the Public Administration Service, 1313 East 6th St., Chicago 37, Ill.

Comparison of the Number of Units of Government in the United States in 1930–33 and in 1941

	1930–33	*1941*
The nation	1	1
The states	48	48
Counties (in 46 states) and parishes (in 1 state)	3,053	3,050
Incorporated places (cities, villages, etc.)	16,366	16,262
Towns (as in New England) and organized townships (in a total of 23 states)	20,262	18,998
School districts	127,108	118,308
Other units	8,580	8,382
TOTAL	175,418	165,049

Of the 16,262 incorporated places, 9,721 have a population of less than 1,000 persons. It is notable that of the total of 165,049 governmental units 118,308, or approximately 72 per cent, are school districts.

(*Continued on page 22*)

(*Continued from page 20*)

A critical shortage in the supply of lumber and pulpwood is again threatening the production of essential war materials in this country. Severe decreases in the output of lumber and pulpwood, due to the lack of manpower, and an increasing need for these products to meet essential military demands are the principal factors affecting the supply of these materials.

To alleviate this situation, Tudor Bowen, Chairman of the Co-ordinating Area Production Urgency Com., has sent a Field Service Bulletin to WPB Regional Directors, Production Urgency Com. Chairmen, and District Managers requesting that they give every possible consideration in granting sufficiently high urgency ratings to insure adequate manpower referrals to production of logs, lumber and pulpwood.

It was pointed out that an increase in the production of lumber and pulpwood throughout the entire nation is essential to the war effort. Lumber is now in such critical short supply that a number of important military programs are seriously affected. Unless action is taken immediately to relieve the manpower and equipment situation, it may be necessary for the military to reschedule some of its essential programs. Over-all lumber production has decreased steadily month by month since August. The supply for the first quarter 1945 is estimated to be 18 per cent below requirements.

Over-all pulpwood inventories in the United States have dropped 12 per cent in the months of September through November of 1944. Much of the available wood pulp supply is now going for non-paper usage such as explosives, rayon and cellophane and the requirements of wood pulp for such materials as military shipping containers and explosives are expanding rapidly.

Russell B. Keeler is now associated with the Hydraulics Dept. of the Douglas Aircraft Co., Santa Monica, Calif.

(*Continued on page 44*)

Changes in Membership

NEW MEMBERS

Applications Received February 1 to 28, 1945

★ *denotes military service*

Abbott, Frank A., Director, Water Bureau, City Hall, Camden, N.J. (Jan. '45)

Ajzenberg, Yisrael, Water Works Engr., 26-a Bar-Kochba St., Tel Aviv, Palestine (Jan. '45)

Austin, Douglas E., Operator, Water Filtration Plant, 410 Ave. C, Ft. Pierce, Fla. (Jan. '45)

Beard, George H., Branch Mgr., Layne-Western Co., 4430 Commercial Ave., Omaha 11, Neb. (Jan. '45)

Bourgeois, Patrick O., Field Engr., International Water Supply, Ltd., 12 Maitland St., London, Ont., Can. (Jan. '45)

Campbell, H. R., Partner, Campbell & Rude, Engrs. & Surveyors, 109 Wanaque Ave., Pompton Lakes, N.J. (Jan. '45)

Clarke, Roland W., Application Engr., R. M. Wade & Co., 106 S.E. Hawthorne Blvd., Portland, Ore. (Jan. '45)

Coburn, Stuart, Chief Chemist, Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass. (Jan. '45)

Daly, J. A., Editor, *Engineering & Contract Record,* 347 Adelaide St., W., Toronto, Ont., Can. (Jan. '45)

Davenport, H. M., Clerk, Corp. of Dist. of Maple Ridge, Haney, B.C., Can. (Jan. '45)

Dominion Bridge Co., Ltd., James Robertson, Mgr., Structural Plant, 275—1st Ave., W., Vancouver, B.C., Can. (Assoc. M. Jan. '45)

(*Continued on page 28*)

(*Continued from page 24*)

Economy Mfg. Co., V. V. Swearingen, Box 188, 948 E. Third St., Chattanooga, Tenn. (Assoc. M. Jan. '45)

Gorham, W. W., Purif. Plant Supt., Wichita Falls, Tex. (Jan. '45)

Guillermety, Luis M., Jr., Chief Engr., Projects Div., Puerto Rico Aqueduct Service, San Juan, P.R. (Jan. '45)

Hamilton, Robert C., 316 N. Mulberry St., Elizabethtown, Ky. (Jan. '45)

Harman, George L., *see* Nox-Weed

Harvie, Claude Hamilton, Public Works Supt., Corp. of Dist. of Surrey, Cloverdale, B.C., Can. (Jan. '45)

Hess, Robert, H., Chief Chemist, Munic. Water Plant, City Hall, Wichita 2, Kan. (Jan. '45)

Hoefer, Harrison B., Chief Engr. of Power Plants, Water Works, 2743 N. 59th St., Milwaukee 10, Wis. (Jan. '45)

Johnson, Arthur H., Assoc. San. Engr., Div. of Water Power & Control, New York State Conservation Dept., 80 Center St., New York, N.Y. (Jan. '45)

Koo, Tsu Yuan, Prin. San. Engr., National Health Administration, Chungking, China (Jan. '45)

Louden, T. N., Gen. Mgr., Western Bridge & Steel Fabricators, Ltd., 195 W. First Ave., Vancouver, B.C., Can. (Jan. '45)

MacWilliam, W. A., Supt., Water & Light Dept., Box 103, Moncton, N.B., Can. (Jan. '45)

Martin, Wesley G., 6054 N. Kent Ave., Milwaukee 11, Wis. (Jan. '45)

(*Continued on page 30*)

(*Continued from page 28*)

McGugan, Donald Johnston, Cons. Engr., 30 McKenzie St., New Westminster, B.C., Can. (Jan. '45)

McLain, Cecil H., Process Engr., J. S. Abercrombie Co. & Harrison Oil Co., Box 7, Old Ocean, Tex. (Jan. '45)

Miller, P. W., Gen. Supt., Water Companies, Gannett Fleming Corddry & Carpenter, Inc., 600 N. Second St., Box 366, Harrisburg, Pa. (Jan. '45)

Morris, B. C., *see* National Cash Register Co., The

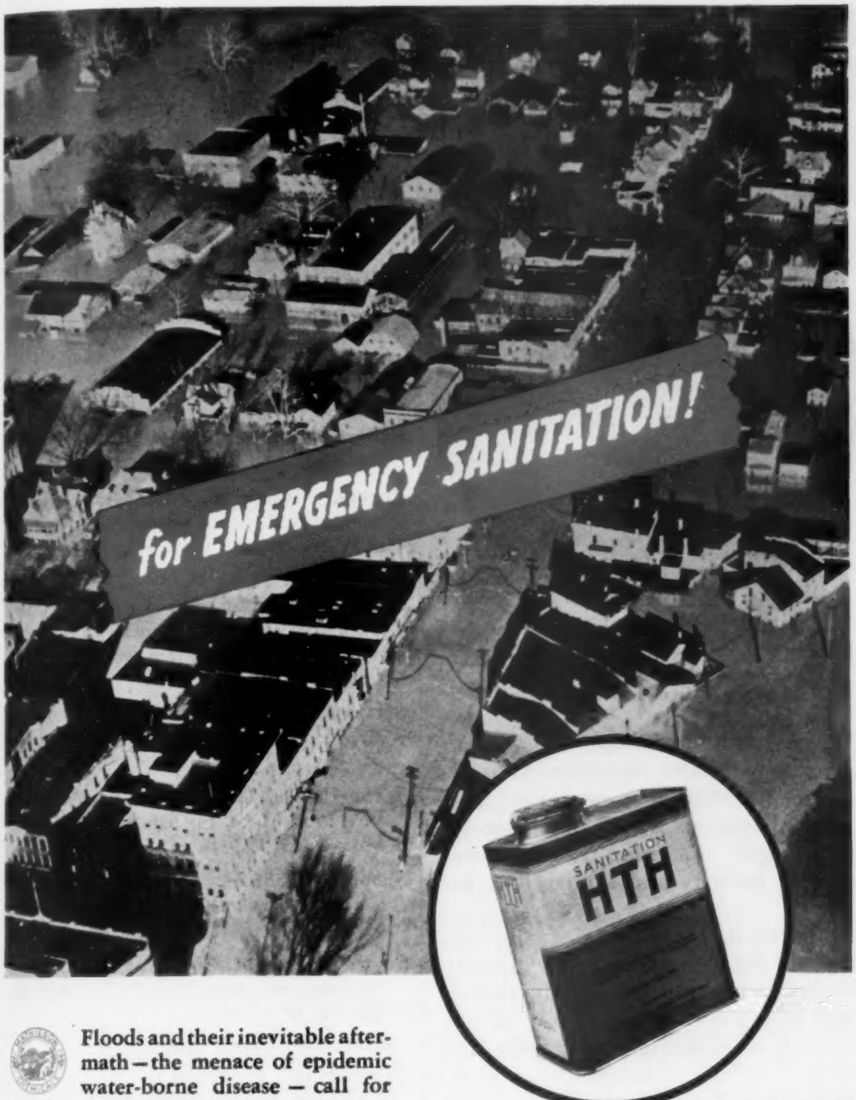
National Cash Register Co., The, B. C. Morris, Mgr., Materials Lab., Dayton 9, Ohio (Corp. M. Jan. '45)

Nox-Weed, George Z. Harman, Owner, 3257 E. Slauson Ave., Los Angeles 11, Calif. (Assoc. M. Jan. '45)

Paterson, Henry A., Control Supt., Mersey Paper Co., Ltd., Liverpool, N.S., Can. (Jan. '45)

Posey, Jesse, Jr., Tech. Asst., Shell Chemical, Cactus Ordnance Works, Dumas, Tex. (Jan. '45)

(*Continued on page 32*)


for EMERGENCY SANITATION!
SANITATION
HTH

(*Continued from page 30*)

Powell, W. H., Engr., Greater Vancouver Water Dist., 1303 Sun Bldg., Vancouver, B.C., Can. (Jan. '45)

Powers, Herman C., Supt., Elec. Dept., City Hall, Tell City, Ind. (Jan. '45)

Quick, James L., San. Engr., Board of Park Com., 302 City Hall, Indianapolis, Ind. (Jan. '45)

Ralston, Glenn S., *see* Servisoft, Inc.

Reid, Russell E., Water Com., City Hall, Bellingham, Wash. (Affil. Jan. '45)

Ridgway, Howard E., *see* Seven-Up Co., The

Robertson, James, *see* Dominion Bridge Co., Ltd.

Rogers, Milford E., Asst. Director of Service & Engr. of Water Supply, Div. of Water Supply, City Bldg., Wichita 2, Kan. (Jan. '45)

Scrutchfield, Paul H., Group Leader, Tech. Service Div., American Cyanamid Co., 1937 W. Main St., Stamford, Conn. (Jan. '45)

Servisoft, Inc., Glenn S. Ralston, Pres., 214 N. Fifth St., Rockford, Ill. (Assoc. M. Jan. '45)

Seven-Up Co., The, Howard E. Ridgway, Vice-Pres., 1221 Locust St., St. Louis, Mo. (Corp. M. Jan. '45)

Shepherd, John H., Public Works Supt., Corp. of City of Nanaimo, Drawer 8, Nanaimo, B.C., Can. (Jan. '45)

South Penn Oil Co., Eng. Dept., 54 Boylston St., Bradford, Pa. (Corp. M. Jan. '45)

(*Continued on page 34*)

(Continued from page 32)

Swearingen, V. V., *see* Economy Mfg. Co.

Thain, H. D., City Clerk, Box 307, Prince Rupert, B.C., Can. (Jan. '45)

Vilá, Jose A., Civ. Engr., Amargura 358, Havana, Cuba (Jan. '45)

Wenrick, H. P., Engr. of Operations, California Water Service Co., 374 W. Santa Clara St., San Jose, Calif. (Jan. '45)

White, L. R., Water Plant Supervisor, U.S. Naval Air Station, 143 Highland, Mount Vernon, Wash. (Jan. '45)

Wilkins, Robert James, Chemist, Wright Aeronautical Corp., Lockland, Ohio (Jan. '45)

Wright, J. W., City Clerk, Water Works Dept., Vernon, B.C., Can. (Jan. '45)

Correction

Hawkins, Fay (Mr.), Supt., Water & Sewerage, Water Dept., Charleston, Ark. (Jan. '45)

REINSTATEMENTS

Austin, James L., *see* Pittsburgh Equitable Meter Co.

Mason, Ernest R., Flight Sgt., RCAF, 140 Roslin Ave., Toronto, Ont., Can. (July '43)★

Mortensen, F. C., Lt. Col., Sn.C., Post San. Officer, Station Hospital, Jefferson Barracks, Mo. (Apr. '40)

Murfitt, W. H., Domestic Water Foreman, Public Works Dept., 145 Main St., Penticton, B.C., Can. (Jan. '37)

(Continued on page 36)

(*Continued from page 36*)

Barron, A. F., 53 W. Jackson Blvd., Chicago 4, Ill. (Sept. '28) *P*

Berry, Garmon H., Box 665, Holly Ridge, N.C. (July '43) *P*

Brenneke, A. M., c/o Instituto Nacional de Obras Sanitarias, Edificio Miranda, Esquina de Mercaderes, Caracas, Venezuela, S.A. (Oct. '34) *M*

Burn, G. A. H., Assoc. San. Engr., Ontario Dept. of Health, 374 Glengarry Ave., Toronto 12, Ont., Can. (Jan. '43)

Chanlett, Emil T., 724 Van Nest Ave., New York 60, N.Y. (Apr. '42)★

Clark, Everett L., Hydr. Engr., 2029 Fletcher Ave., South Pasadena, Calif. (Oct. '39) *M*

Clark, Joseph R., c/o Robert Almon, Route 2, Owensville, Ind. (Apr. '44)

Coates, John J., 5534 Capital Heights Ave., Baton Rouge 12, La. (Jan. '38)

Dose, Herman W., 1503 Peterson, Gainesville, Tex. (Apr. '44) *M*

Eich, Henry F., Lt., Sq. H. 327 BU, Drew Field, Fla. (Apr. '43) *P*★

Fox, Jeff S., 723 E. Mulkey, Fort Worth 3, Tex. (July '42) *P*

Fuller, H. L., Civ. Engr.-Sales Engr., A. C. Horn Co., 420 E. 73rd Terrace, Kansas City 5, Mo. (July '42) *M*

Greenfield, Harry C., R.F.D. 2, Harrisburg, Pa. (Apr. '44) *MP*★

Gunter, Herman, Box 631, Tallahassee, Fla. (May '28)

Hanks, O. P., 105 Parkway Ave., Trenton 8, N.J. (Oct. '35)

Hernandez, Alberto, Box 92, Guaynabo, P.R. (Oct. '42)

Jack, Allen, Mgr., San Francisco Branch, Hersey Mfg. Co., 116 New Montgomery St., San Francisco 5, Calif. (Oct. '41)

Keeler, Russell B., 5417 Lemon Grove, Los Angeles 38, Calif. (Apr. '44) *MP*

(*Continued on page 40*)


YOUR WATER PIPE PROJECTS
ARE CRYING FOR ACTION!
Plan Now to Install
ALCO ELECTRIC WELDED STEEL PIPE
You'll want ALCO Electric Welded Steel Pipe because it's strong
—Because it is smooth—assures maximum capacity
—Because its long lengths assure minimum joints, rapid installation
—Because its light weight, too, makes for easier, faster handling
—And because it is widely known, widely used, is thoroughly dependable for vitally important water, gas, oil and sewer lines.
Make your plans now to get the ALCO Electric Welded Steel Pipe you will want. Line up your requirements—and tell us, so that your project will get precedence just as soon as restrictions are lifted.
American Locomotive
ALCO PRODUCTS DIVISION
30 Church Street, New York 8, N. Y.
Dunkirk, N. Y.
Buy War Bonds

(*Continued from page 38*)

Klinker, L. I., 4830 N. Damen Ave., Chicago, Ill. (Apr. '43)

Kopp, Joseph P., 114 Sexton St., Struthers, Ohio (Oct. '44) ★

Launer, Nelson M., Mgr., R.F.D. 1, La Habra, Calif. (Oct. '37)

Lazard, Paul J., 27 E. 94th St., New York 28, N.Y. (Affil. Jan. '45)

MacGregor, David, Box 1667, Paterson 16, N.J. (Oct. '43)

MacPherson, Roderick, 5844 Stoney Island, Chicago 37, Ill. (Jan. '41)

Maguire, John J., 8234 Brookside Ave., Elkins Park, Pa. (Jan. '43) *P*

Margolis, Elly T., 5511 Cabanne, St. Louis, Mo. (July '42)

Mau, Gordon E., 4218 Center Ave., Des Moines 12, Iowa (July '43) *AP*

McMorrow, Bernard J., Director, Bureau of Sanitation, Board of Health, Honolulu 1, T.H. (Jan. '38)

Mitchell, William, Chief Engr. & Chemist, Northern Illinois Water Corp., 215 Eleventh St., Streator, Ill. (Jan. '42)

Moat, C. P., 487 S. Willard St., Burlington, Vt. (Jan. '15) *P*

Nicklis, James A., Dist. Repr., Wallace & Tiernan Co., Inc., 2742 Tremont Rd., Columbus 8, Ohio (Apr. '39)

Norcom, George D., Conover Lane, Red Bank, N.J. (June '21)

Nukem Products Corp., John W. Chandler, Asst. Secy., 111 Colgate Ave., Buffalo 20, N.Y. (Assoc. M. July '44)

O'Leary, Frederick J., West Coast Engr., The Barrett Div.—Allied Chemical & Dye Corp., 454 S. Almont Drive, Beverly Hills, Calif. (Oct. '34)

Payne Deane & Co., Box 589, Poughkeepsie, N.Y. (Assoc. M. Oct. '43)

Reeves, Walter Louis, 611 W. Platt, Tampa 6, Fla. (Jan. '44) *M*

(*Continued on page 42*)

(*Continued from page 40*)

Romer, Harold, c/o Block, 1074 E. 12th St., Brooklyn 30, N.Y. (Apr. '43) *MP*★

Schlie, Everett H., Asst. Chemist, Chesapeake & Ohio Ry. Co., 236 W. 12th St., Peru, Ind. (Apr. '42) *P*

Scott, Rossiter S., Dist. Mgr., Dresser Mfg. Div., Dresser Industries, Inc., 122 E. 42nd St., New York 17, N.Y. (Mar. '22) *M*

Setzer, H. K., Contractor, Box 574, Hickory, N.C. (Oct. '42)

Shockley, C. A., The Shockley Engineering Co., 203 Reliance Bldg., 216 E. 10th St., Kansas City 6, Mo. (Apr. '44) *P*

Stewart, Morgan E., 1st Lt., Sn.C., APO 515, c/o Postmaster, New York, N.Y. (Jan. '44)★

Thornton, Gustavus, Constr. Engr., Ford, Bacon & Davis, Inc., Box 4068, Odessa, Tex. (Apr. '39)

Trowbridge, A. L., Mgr., California Water Service Co., Box 907, Bakersfield, Calif. (Jan. '42) *M*

Walton, Graham, c/o Chief Medical Officer, Bureau of Prisons, Dept. of Justice, Washington 25, D.C. (Jan. '41) *P*

Zadigan, Ruben, 1st Lt., APO 523, c/o Postmaster, New York, N.Y. (Oct. '42)★

MEMBERS ENTERING MILITARY SERVICE

Knowlton, Kenneth F., Supt.-Chemist, Salem & Beverly Water Supply Board, Filtration Plant, Arlington Ave., North Beverly, Mass. (Jan. '43)★

Kopp, Joseph P., 114 Sexton St., Struthers, Ohio (Oct. '44)★

Richheimer, Charles E., Cons. Engr., Box 4817, Jacksonville 1, Fla. (Jan. '37) *P*★

Stiemke, Robert E., Assoc. Prof. of San. Eng., Eng. Expt. Station, North Carolina State College, Raleigh, N.C. (Oct. '42) *P*★

(*Continued from page 22*)

A referendum is not necessary in order for a community in the state of New York to chlorinate a polluted public water supply, according to a recent issue of *Health News,* weekly news letter of the New York State Dept. of Health. *Health News* relates the following story:

> Referendum to the voters of a community is not required in order to provide chlorination of a polluted public water supply, according to a recent opinion rendered by Nathaniel L. Goldstein, Attorney General of New York State.
>
> A question involving this point arose following the defeat, by the electorate of an upstate community, of a proposal to provide funds for chlorination of the municipal water supply which had become polluted, and the subsequent issuance by the State Commissioner of Health of an order directing chlorination on or before a specified date. As a basis for future action in such situations, the Department asked the advice of the Attorney General on the following questions:
>
> "1. Considering the emergency existing and the fact that the village board has received an order from the State Department of Health, as referred to above, is said village board legally justified in going ahead with the improvement without a new referendum?
>
> "2. In the case where an order is issued, the referendum is held and defeated by the electors, may the village board, in consideration of the facts stated above and acting under the order, legally proceed to comply with the requirements of said order?"

(*Continued on page 46*)

(*Continued from page 44*)

In his reply the Attorney General stated:

"Matters of public health have always been recognized as within the police power of the State, and the police power of the State has never been questioned when it dealt directly with the hygienic conditions of a community (*Adler v. Deegan,* 251 N.Y. 467; *Robertson v. Zimmerman,* 268 N.Y. 52).

"It is my opinion, therefore, that the order of the Commissioner of Health, under the authority of Section 88 of the Public Health Law, is mandatory and that no referendum is required. If one is held, it is merely a futile gesture and the order of the Commissioner, if reasonable, must be complied with.

"My opinion is further strengthened by an examination of Section 225 of the Village Law, the provision most applicable to this question, which reads as follows:

> 'The Board of Trustees may, by resolution, determine to purchase or acquire additional water or water rights or to construct or add to a water purification or treatment plant or to construct additional reservoirs, or to otherwise increase the system of water for the village. If such resolution is adopted the same shall state the maximum sum to be appropriated for that purpose and such improvements shall be made accordingly. For that purpose the board has the same power and is subject to the same duties and liabilities as in the construction of the original system of water works.'

"My predecessor held (1931 Atty. Gen. 322), in construing this section, that no permissive referendum was required. There has been no change in this section since that time.

"For the foregoing reason, it is my opinion that no referendum is necessary to provide for chlorination of a water system which has become polluted."

(*Continued on page 48*)

(*Continued from page 46*)

Water departments might well bear in mind this decision, quoted from the January *Casualty and Surety Journal,* when considering their attention to meter box covers and curb box covers:

A woman went into a drugstore to make a purchase. Upon leaving, she tripped and fell over the edge of a vault cover on the sidewalk in front of the store. The cover was raised about an inch and a half from the sidewalk and there was a space of about an inch between the sidewalk and the elevated cover. She brought suit to recover for her injuries. The lower court dismissed her complaint. The owner of the building contended that he should not be held responsible as the defect claimed was so trivial and slight that it would be unreasonable to charge him with negligence. But the appellate court held that this was a proper question of fact for the jury to decide. The plaintiff was granted a new trial. (Gibson *v.* Jaystone Drug Company, Inc. (New York 1943) 45 N. Y. S. 2d 380.)

The A. P. Smith Mfg. Co. has announced the resignation of Thomas L. Halpin as Gen. Sales Mgr. on Jan. 1, 1945. Halpin, who has been with the company for twenty years in a sales capacity and as Gen. Sales Mgr. since Jan. 1, 1942, is resigning because of a progressive eye ailment which has made it impossible for him to continue in this capacity. He will remain in the sales organization of the company, returning to his former sales territory.

Gerald J. Manahan will succeed Halpin as Gen. Sales Mgr. Previous to his affiliation of a number of years' standing with The A. P. Smith Mfg. Co. in the New England territory, Manahan served several years in a municipal water department and was subsequently general manager of a water works equipment and supply company.

Frank F. Wells will succeed Manahan as Sales Engr. for the New England territory. Wells has spent over twenty years as a sales representative in that area. He recently resigned from the Transite Pipe Div., of the Johns-Manville Corp.

The new New England sales office of the company will be located at 54 Elm St., Melrose, Mass., under Wells' direction.

NEWS OF THE FIELD

Cross-connections and the dangers from back-siphonage are the subject of two articles in this issue of the JOURNAL. The special report made to the National Research Council is discussed by M. Warren Cowles, present chairman of the A.W.W.A. Committee on Cross-Connections, who points out that the desire of customers of water utilities to provide water for their own uses without depending exclusively upon the public water supply makes much more difficult than many realize the task of protecting the public against dangers of polluted water. It is too often forgotten that not the water utility but the wilful customer creates the problems derived from uncontrolled private supplies or from inferior plumbing practices.

It is unfortunate that so widely read a periodical as *Newsweek* should in its April 2 (1945) issue discuss the report in these words: "Ever since the Chicago amebic dysentery scare in 1933, public water supply systems have been suspected of contamination." The Chicago amebic dysentery epidemic was a catastrophe—not a "scare." The engineering studies made it clear that back-siphonage on customers' premises, not the public water supply of Chicago, was the cause of the disaster. The National Research Council report shows that the distribution of water on customers' property still continues to menace health, because the customers (some of them agencies of the federal government) have not yet learned that the safe water which is provided by the public utility can be made unsafe through carelessness and bad plumbing.

The *Journal of the American Medical Association* in its March 24 issue comments much more constructively.

> Sanitary engineering practice has recognized for many years the hazards attached to the current operation of public water supply systems. . . . The systems operate under varying conditions of starting and stopping and with thousands of exposures through plumbing installations attached for maximum public, private and industrial uses. These innumerable outlets and interconnections are essential not only for potable water use but for many of the sanitary equipments operated in a water carriage system. No matter how well conceived a water supply system may be, physical relation to nonpotable liquids may result from many of the uses in a modern community. Control of these many collateral uses is one of the most difficult functions of public service. Rarely does a comprehensive system prevent or eliminate the many cross- and back-siphonage connections which are in existence or which may be continually made.
>
> The Chicago amebic dysentery epidemic in 1933 dramatized the problems attached to the consistent delivery of safe water. This epidemic emphasized the thinness of the dividing line between safety and danger where water supply is exposed to sewage contamination at the points of consumer use.

(*Continued on page 2*)

(*Continued from page 1*)

These "hazards at the point of consumer use" were the real problems studied by the NRC Committee. They continue to be among the serious problems of water works administration. They lie within the area under the control of the customer, who often resents attempts on the part of the water utility to protect its other customers from his misdemeanors.

The forthright adoption of a property-wide policy of cross-connection control by the American Water Works and Electric Co. is a timely answer to those who would charge the water supply field with indifference. Paraphrasing the "corrupt but contented" phrase of the muck-raking days, the public attitude concerning the dangers from antique plumbing can well be expressed by "in danger but indifferent."

Louis F. Warrick, State San. Engr., Wisconsin State Board of Health, has announced the receipt of the following resolution from the Wisconsin State Dental Society, drawn up at their annual convention in Milwaukee in March:

"WHEREAS we, the members of the Wisconsin State Dental Society's Fluorine Committee, convinced that the overwhelming weight of the evidence now precludes any doubt that a drinking water supply containing a concentration of one part per million of fluorine, as fluorides, inhibits dental decay;

"AND WHEREAS all evidence shows that the optimum of one part per million of fluorine, as fluorides, in water has produced no untoward results,

"WE THEREFORE recommend that public water supplies deficient in fluorides have their concentration raised to one part per million of fluorine, as fluorides, to inhibit dental decay, providing that such addition is under dental, medical, engineering and public health control."

Warrick comments that "there has been considerable interest in this subject in recent months, with a very active committee of the Dental Society . . . pushing studies in areas where the amount of fluorine naturally present in the water is around 1 ppm. They have been quite impressed with their observations of children and a review of records of dentists and expect to push forward with these studies, possibly with several communities undertaking the treatment of their water supplies with sodium fluoride.

"Our water works group for the time being has been following the 'role of watchful waiting,' maintaining the position that the Dental Society should make up its mind on the matter, and it is probable, in view of the resolution acted upon, that there will be a detailed discussion of this matter at the next meeting of the Wisconsin Section, A.W.W.A."

Mass treatment of a public health problem is a comparatively new pattern, and the addition of fluoride to public water supply to prevent dental caries has been greatly stimulated by the leadership of Dr. H. Trendley Dean, U.S. Public Health Service [see Jour. A.W.W.A., **35**: 1161 et seq. (1943)]. Two Hudson River communities are being used

(*Continued on page 4*)

(*Continued from page 2*)

by the New York State Dept. of Health for experimentation in the field; fluoride is being added to the water of one town, while another, with a water supply of virtually the same nature, is being studied as a control. The children in the public schools of both towns will be examined periodically for ten years. Brantford, Ont., and Grand Rapids, Mich., add fluorine to their water supplies.

Phillip C. Saindon, Supt., 1st Suburban Water Utility Dist. of Davidson County, Nashville, Tenn., is now taking an Engineer's Training Course at Ft. Leonard Wood, Mo. Saindon is an alumnus of Vanderbilt University where he was graduated in engineering. He has also taken two years of law study.

James Wood, former Eng. Inspector of Water Works, Board of Water Comrs., Peekskill, N.Y., is now a Resident Engr. in Venezuela for Parsons, Brinckerhoff, Hogan & Macdonald. He has been engaged on the Caracas water supply since November 1944 and has been assisting on the Agua Fria earth-fill dam and the Ospino-Barinas bridges.

Wood was with the Peekskill Water Commissioners from 1928 until 1942, when he was called to active duty as a major in the Marine Reserve Corps. He had enlisted in the Marine Corps in 1917 and left as a captain in 1919.

Harold F. Rock, Dist. San. Engr., New York State Dept. of Health, Oneonta, N.Y., has been commissioned in the Army and assigned to Luke Field, Ariz., where he is in charge of all sanitation. Lieutenant Rock reports that the drilled-well supply is so excellent bacteriologically that "real water 'headaches' would now surprise me."

Albert Otis True, Civil and Sanitary Engineer for the Proximity Manufacturing Co., Greensboro, N.C., for the past 23 years, died on March 9 after a short illness.

A native of Massachusetts, Mr. True grew up in Newton and graduated from the Massachusetts Institute of Technology. He was commissioned a captain in the Corps of Engineers during the First World War, and before going to Greensboro was associated with Hering and Fuller, New York.

Mr. True, who joined the A.W.W.A. in August 1922, was Chairman of the North Carolina Section in 1940–41.

(*Continued on page 6*)

(*Continued from page 4*)

Howard D. Schmidt, former State San. Engr., Tennessee State Health Dept., is now San. Engr. and Assoc. Chief of Party for the Coordinator of Inter-American Affairs in Chile. Schmidt has been Chief of Party in Panama since January 1943. He is a former Director of the A.W.W.A. and won the Fuller Award for the Kentucky-Tennessee Section in 1940.

Frank E. DeMartini has transferred from his post as Chief of the Water and Sewage Section of the San. Eng. Div., U.S. Public Health Service, Washington, to sanitary engineering activities at the Water and Sanitation Investigations Station, U.S.P.H.S., Cincinnati, Ohio. DeMartini was graduated in sanitary engineering from the College of Civ. Eng., University of California, in 1927. For the next eight years he was with the California Dept. of Health and then accepted an appointment as Water Purif. Engr. in the San Francisco Water Dept. He has been with the U.S. P.H.S. for the past six years.

George J. Rohan has resigned from his post as Supt., Waco, Tex., City Water Works after twelve years' tenure to organize the Rohan Co. in Waco. The company will distribute water works and municipal supplies and now represents the Hays Mfg. Co., the Hydraulic Development Corp., the National Water Main Cleaning Co., the Rensselaer Valve Co. and several other organizations in the Southwest area.

Rohan, who holds a civil engineering degree from the University of Cincinnati, was Chairman of the Southwest Sec., A.W.W.A., in 1934 and A.W.W.A. Director for the 1939–42 term, and he has been Secretary of the Southwest Sec. for the past three years. He was a first lieutenant in the Engineer Corps, U.S. Army, during the First World War.

George T. Horton, President of Chicago Bridge & Iron Co., died suddenly on March 19.

Upon graduation from Rensselaer Polytechnic Institute in 1893, Mr. Horton joined the company which had been founded by his father, Horace E. Horton, and he succeeded to the presidency when his father died in 1912. He was himself a practicing engineer and developed many of the designs used by the company. He belonged to a number of engineering societies and was a trustee of R.P.I. from 1925 until his death. He was associate representative for Chicago Bridge & Iron Co. in the A.W.W.A., the company having joined in 1908.

(*Continued on page 8*)

(*Continued from page 6*)

Robert W. Slee, formerly head of Wiley-Slee Associates, Chicago, engineering, sales and general contracting firm specializing in the sanitary field, has been appointed Gen. Sales Mgr. of A. D. Cook, Inc., Lawrenceburg, Ind. He will be in charge of sales, service and product development of deep well turbine pumps, well strainers and supplies and automatic water system units.

John T. Woodson, formerly Southeastern Sales Mgr. for National Cast Iron Pipe Div., James B. Clow & Sons, Birmingham, Ala., has been appointed Southern Sales Mgr., and will serve both southeastern and southern territories. Woodson, for many years connected with the Lynchburg Foundry Co., Lynchburg, Va., has been associated with National Cast Iron Pipe since 1940. He succeeds the late William J. Lyman in his present post.

C. N. Wagenseller was retired on March 31 after 38 years' association with the Mueller Co., Decatur, Ill., where he had been editor of the *Mueller Record,* bi-monthly house organ of the company. He writes

(*Continued on page 10*)

(*Continued from page 8*)

to Association headquarters, "Prior to my connection with Mueller Co., I was a newspaper editor and perhaps like some of my ilk thought I knew it all. My association with this company has shown me the error of my way. I have learned one good lesson which is that the water works industry is the foundation of the present industrial and commercial importance of this country, and that upon water works depends future growth and development. I consider myself fortunate if I have through our publication contributed even a mite to this condition. After 38 years with Mueller Co. I feel that I am qualified in saying this company is a faithful ally of your organization which has contributed so much to our advancement in the ranks of civilized nations."

Wagenseller will maintain his residence in Decatur.

Frank C. Hill, Supt. of Water and Sewage, Montrose, Colo., for the past ten years, has resigned that post to become Acting Chief of the Dept. of Public Works, Grand Junction, Colo., where he is in charge of the filtration and sewage disposal plants and flow lines and distribution systems.

(*Continued on page 12*)

(*Continued from page 10*)

The Steel Pipe Research Committee of the American Iron & Steel Institute, 350 Fifth Ave., New York 1, has established at four permanent forts of the U.S. Army in the eastern United States a steel pipe research project which involves different types of chemical treating equipment, meters and testing equipment. Study of the contrasting results shows corrective trends. The investigation will be continued over a period of years.

Another project, now in its second year, involves a large housing development near the Brooklyn, N.Y., Navy Yards. Steel pipe test loops have been installed in four locations and at different elevations in the various buildings. Inspections, water sampling and complete water analyses are made regularly and complete records are kept. The purpose of these tests is to show the efficiency of a certain type of chemical in controlling corrosion in plumbing systems where a water as aggressive as the New York City water supply from the Catskill and Croton sources is used.

A two-year project in an Ohio city proceeded along different lines. Here the study centered upon the specific use and efficiency of cathodic (electrical) protection of hot water steel pressure tanks and piping contrasted with chemical treatment. A series of household hot water tanks were set up with sidearm coil type heaters, thermostatically controlled, connected by long sections of steel pipe. Some of the tanks were made of black steel, others of galvanized steel. Of all the corrosion control methods used, the cathodic method proved to be the most effective under this specific use.

The Committee studies and compares data concerning different kinds of pipe, with a view toward aiding architects, designing engineers, boards of health, plumbing associations, jobbers and other allied interests. Sizes, thicknesses and properties of pipe are analyzed and relative values are compared.

(*Continued on page 14*)

(*Continued from page 12*)

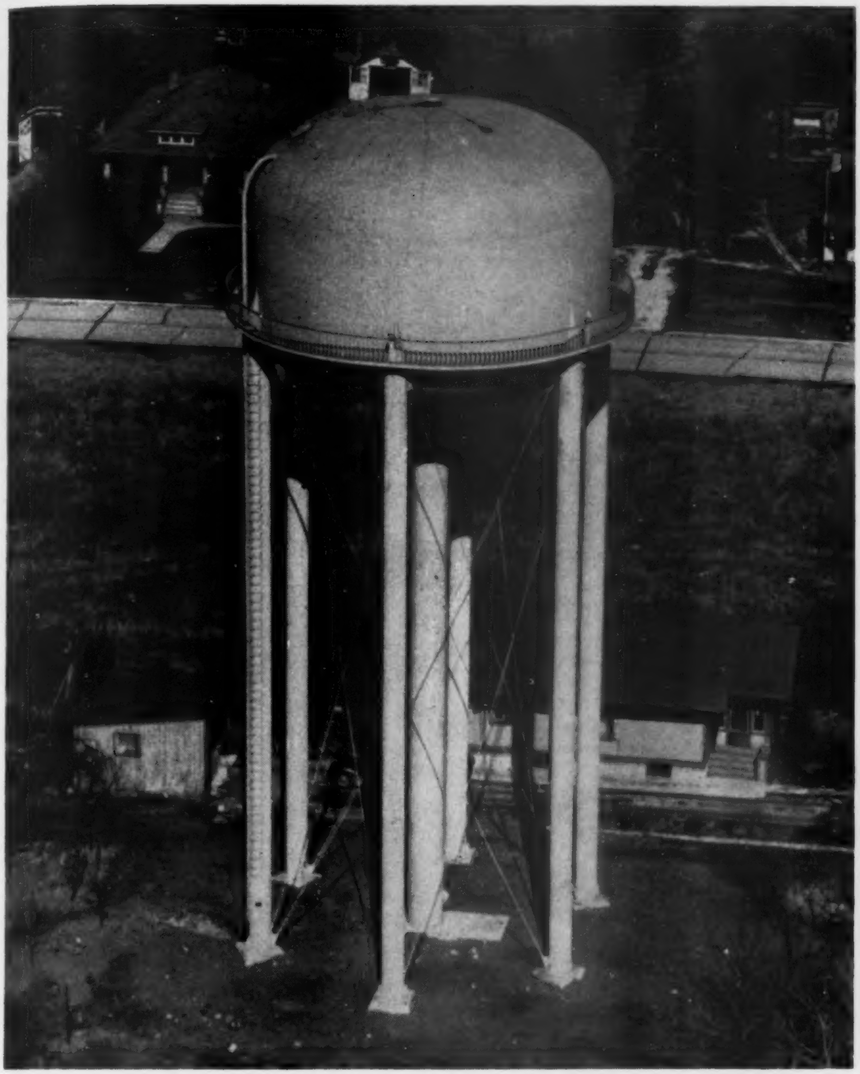
Frank E. Alderman, City Engr. for the City of South Gate, Calif., for the past seven years, has accepted an appointment as a Civ. Engr. with Holmes & Narver, Cons. Engrs., Los Angeles.

W. H. Moeller has been appointed Mgr. of the New York Dist. of the American Well Works, Aurora, Ill. The W. K. Sowdon Co. has been special representative for American Well Works in the water and sewage treatment lines and will continue to be under Moeller's direction.

J. Lloyd Barron, Director of the Div. of Sanitation of the Nassau County, N.Y., Dept. of Health since 1938, has resigned to become San. Engr. of the National Biscuit Co., New York. His new work includes sanitary supervision of milling and manufacturing plants of the National Biscuit Co. throughout the United States.

Ralph J. Duvall, Asst. Mgr. of the Kansas City, Kan., Utilities, has succeeded the late James D. Donovan as Mgr. of Production and Distribution, Board of Public Utilities, there.

(*Continued on page 16*)



(*Continued from page 14*)

The sixth edition of "The Control of Communicable Diseases" has just been released by the American Public Health Association, 1790 Broadway, New York 19.

First published in 1916, the volume contains standard recommendations for the administrative control of communicable diseases. This edition has been stamped "official" by the U.S. Public Health Service and the Navy, and has been approved in principle by the Surgeon General of the Army. The National Health Administration of China has recommended its official adoption, and many of its sections were prepared with the cooperation of the Medical Staff of the British Ministry of Health.

The new issue contains 72 chapters, of which 20 are new. All the common communicable diseases are included, as well as those less frequently encountered, such as the so-called "tropical" diseases. It is being translated into Spanish, Portuguese, French, Italian, Chinese and, possibly, Arabic.

"The Control of Communicable Diseases" is obtainable from the Book Service of the A.P.H.A. for $.35 per copy. Quantity orders are filled at special rates.

(*Continued on page 18*)

(*Continued from page 16*)

"Pollution Control—A Postwar Public Works Opportunity for the States" is discussed by Kenneth A. Reid, Executive Director of the Izaak Walton League of America, in the February issue of *State Government,* a monthly magazine published by the Council of State Governments. In the article he says:

The bulk of the work done on water pollution to date has been in refining the treatment processes of water supply plants so the ultimate product delivered to the consumer through the faucet will be a bacteriologically safe fluid. It is a wonderful tribute to our water works engineers and chemists that they have been able to refine their treatment processes, as the source of supply becomes more and more polluted, so that human beings can consume the ultimate product and live to tell the tale. But the breaking point has been reached in numerous important cities and there is a limit to which science can go in making drinking water out of raw sewage and industrial wastes. We have been treating pollution at the wrong end—at the intake of our water supply plants rather than at the outfall of the sewers. We need to reverse that process.

Under the chairmanship of Dr. W. E. Howland, Purdue University, the Indiana Sec., A.W.W.A., the Indiana State Board of Health and Purdue recently sponsored Indiana's Tenth Annual Series of District Meetings for Water Operators. The state is divided into six sections and attendance at meetings in centrally-located cities in each section were enthusiastically attended, the total number of participants being only a few less than in the peak year of 1942. Twenty-seven per cent of the public water supplies in the state were represented by attendants at the meetings.

On Dr. Howland's committee were M. P. Crabill, H. H. Dold, H. J. Draves, F. W. Hartman, Leo Louis, Mike Schmitt Jr. and W. C. Shoemaker. The meetings were devoted to the theme of postwar planning.

While fighting was still going on in the streets of Manila, two automatic chlorinators were ordered by the U.S. Army Engineers from Wallace & Tiernan Co., Inc., for air delivery by the Army Transport Command to Manila. The Army acted on the assumption that the retreating Japanese would destroy at least part of the municipal water system. Col. E. W. Garbisch, N.Y. Dist. Engr., U.S.A., supervised the rush shipment.

Before the Japanese occupation, Manila's modern filtration plant was adequately equipped with several Wallace & Tiernan chlorinators.

(*Continued on page 20*)

(Continued from page 18)

St. Louis, Mo., has a postwar program which includes financial provisions and blueprints for $19,000,000 worth of water works improvements and $8,000,000 of sewers. Milton M. Kinsey, Pres., Board of Public Service, recently described the program to the Citizens Postwar Construction Council, Jefferson City, Mo., in the following words:

We hear and read a great deal about postwar planning, but I for one, am very much afraid that there is too much talk and too little action. . . . You would be shocked to know how small an amount of financing has been carried out for postwar projects.

Our Mayor appointed a large committee . . . charged with the duty of investigating each of [St. Louis's proposed] projects and making recommendations as to their suitability. A list of . . . 165 items, totalling approximately 55 million dollars, was submitted to this committee. Due to the size of the task, the 165 projects were divided into eleven main groups, and a sub-committee of the Citizens' Committee was assigned to each of these groups. . . . Our Mayor requested them not to be mere rubber stamps, but to report adversely on any project which did not meet their full approval, and to suggest other projects if they saw fit. Each of these committees reported on the group of projects assigned to it, and in most instances recommended changes in the list proposed by the City officials. In fact, they added projects so that the total reached $63,000,000 and they assisted in re-study of the bond situation, the final decision being that we could stretch the bond issue to $43,500,000. Almost universally, the Citizens' Committee recommendations were adopted.

While this procedure was being carried out, lawyers, expert in the legal phases of bond issue procedure, were preparing the ordinances and bond issue proposals to be voted on, and a publicity committee gave radio talks, decorated billboards, issued news stories and passed out handbills to inform the public of the program. One interesting phase of the publicity was a ballot by school children and their families in which they expressed their preference on the various projects proposed. This plan was eminently successful; in fact, so successful, that the 50,000 ballots which were returned could not be analyzed in time to publicize the results before the election.

When election day came, . . . the various items in our bond issue were carried by majorities of approximately five to one. So now we have a program and the money to pay for it.

You will note that our program does not depend on any Federal assistance. It stands on its own bottom. However, if Federal money becomes available, the program can be readily expanded by re-inserting projects which heretofore have been rejected. We, at the City Hall, know now exactly what projects are to be constructed and how much money will be available for each of the items and we are now proceeding to translate this whole program into blueprints. Approximately $2,000,000 worth of work could be let on contract within a few days after cessation of hostilities, even if the war ended tomorrow, and if the Germans hold out for three or four months, we will have many millions of dollars worth of work ready for taking bids. To do this, we intend to utilize all of the private engineering and private architectural talent which is available in St. Louis, in addition to those on our payroll.

(Continued on page 24)


CAST IRON

(Continued from page 20)

On March 10, Under Secretary of War Robert P. Patterson added a white star to the Army-Navy "E" pennants of both Wallace & Tiernan Co., Inc., and Wallace & Tiernan Products, Inc., Belleville, N.J. It was the fifth "E" award for each company, one of the few instances where two associated companies in widely separated fields each have been five-time winners.

Wallace & Tiernan Co., Inc., was honored for its activities now exclusively devoted to the production of a variety of war goods including all types of water purification equipment in use by Allied forces. Wallace & Tiernan Products, Inc., won its award for its production of war goods ranging from vital pharmaceuticals to delicate control instruments, aids to navigation, and a variety of confidential and secret items.

The Refinite Corp., Omaha, Neb., has been awarded the Army-Navy "E." Since the beginning of the war, the company's work has been devoted almost 100 per cent to war production. It recently received a contract from the Army for 550 Dyatomite Filters, to be completed by August.

(Continued on page 44)

Changes in Membership

NEW MEMBERS

Applications received March 1 to 31, 1945

★ *denotes military service*

Allen, R. B., City Engr., Water & Sewer Dept., West University Place, 3800 University Blvd., Houston 5, Tex. (Jan. '45)

Ames, Lewis, Supt., Water System, Eureka Springs, Ark. (Affil. Jan. '45)

Atlas Foundry & Machine Co., Joe L. Long Jr., Secy.-Treas., 3012 S. Wilkeson St., Tacoma 1, Wash. (Assoc. M. Jan. '45)

Bechtold, Harry F., Supt., Water Dept., City Hall, Lebanon, Pa. (Jan. '45)

Betz, John Drew, Asst. Gen. Mgr., W. H. & L. D. Betz, Gillingham & Worth Sts., Philadelphia 24, Pa. (Jan. '45)

Both, Jack, Owner, Diamond Construction & Engineering Co., 18 Gordon St., Belleville, Ont., Can. (Jan. '45)

Box, E. L., Mgr., Public Utility Com., Water Works Dept., Seaforth, Ont., Can. (Jan. '45)

Bristow, Joseph Francis, Asst. Engr., Water Supply Dept., City Council, Jolimont St., Sherwood, Brisbane, Queensland, Australia (Jan. '45)

Bristow, Wm. M., Sr. Officer Mechanic, Bureau of Prisons, U.S. Dept. of Justice, Lock Box 250, Steilacoom, Wash. (Jan. '45)

Broadnax, John E., Foreman, Filter Plant, Southern Bleachery & Print Works, Inc., Box 442, Taylors, S.C. (Jan. '45)

Byrne, John J., *see* Kingston Water Dept.

Callan, T. N., *see* Chippawa, Village of

(*Continued on page 30*)

(*Continued from page 28*)

Case, Edmond W., Supt., Water Dept., Sweet Home, Ore. (Jan. '45)

Cater, Thomas J., Jr., Assoc. San. Engr., Constr. & Utils., Warner Robins Air Technical Service Command, 104 Thomas Blvd., Warner Robins, Ga. (Jan. '45)

Caverly, David S., Asst. San. Engr., Ontario Dept. of Health, 807 Richmond St., W., Toronto 3, Ont., Can. (Jan. '45)

Chippawa, Village of, T. N. Callan, Clerk, Water Works Dept., Chippawa, Ont., Can. (Corp. M. Jan. '45)

Coffin, George W., Cons. Engr., 68 Devonshire St., Boston 9, Mass. (Jan. '45)

Consolidated Water Power & Paper Co., Lloyd L. Klinger, Chemist, Mailing No. 26, Wisconsin Rapids, Wis. (Corp. M. Jan. '45)

Cornish, A. C., *see* Shell Chemical Div.

Cote, J. Chas., City Engr., Sherbrooke, Que., Can. (Jan. '45)

Davila & Llenza, Charles Llenza, Cons. Engr., Box 298, Rio Piedras, P.R. (Assoc. M. Jan. '45)

El Paso Health Dept., W. B. Prothro, Director, 209 S. Campbell St., El Paso, Tex. (Corp. M. Jan. '45)

Fardahl, Nels, Maj., C.E., Post Engr., Sheppard Field, Tex. (Jan. '45)★

Frith, Cecil, *see* Rocky Mount, Town of

Fry, Loyd M., Operator, Water Dept., Box 567, Jasonville, Ind. (Jan. '45)

Garber, Stephen L., Gen. Mgr., Marquette, Mich. (Jan. '45)

Geuss, Geo. L., Service Engr., Pittsburgh Equitable Meter Co., 829 W. 1st St., Elmira, N.Y. (Jan. '45)

(*Continued on page 32*)

(Continued from page 30)

Graham, William, Foreman of Waste Water Disposal, Richfield Oil Corp., Box 787, Wilmington, Calif. (Jan. '45)

Greller, Sidney M., Pvt., ASN 33814022, Box 1, Newman Hall, Univ. of Illinois, Champaign, Ill. (Jr. M. Jan. '45) ★

Hafner, William Louis, Field Repr., Wallace & Tiernan Co., Inc., 2510 Walker Ave., Greensboro, N.C. (Jan. '45)

Hamelin, Douglas F., Water Supply Engr., Dept. of Transport, Civ. Aviation, Post Office Bldg., Lethbridge, Alta., Can. (Jan. '45)

Hansen, Alfred E., Cons. Civ. Engr., 211 Michigan Theatre Bldg., Muskegon, Mich. (Jan. '45)

Herod, W. N., Dist. Mgr., Canada Wire & Cable Co., Hamilton, Ont., Can. (Jan. '45)

Huvelin, G., *see* Paris Compagnie Générale des Eaux

Jeffcoate, Philip Robert, *see* Luton Water Co.

Johnson, J. L., Sales Mgr., Neptune Meters, Ltd., Long Branch, Ont., Can. (Jan. '45)

Jones, Charles, Water Works Supt., Corp. of Richmond, Town Hall, Brighouse, B.C., Can. (Jan. '45)

Kingston Water Dept., John J. Byrne, Supt., City Hall, Kingston, N.Y. (Corp. M. Jan. '45)

Klein, A. H., Supt., Light, Water & Sewers, South St., Huron, Ohio (Jan. '45)

Llenza, Charles, *see* Davila & Llenza

Long, Joe L., Jr., *see* Atlas Foundry & Machine Co.

(Continued on page 34)

(*Continued from page 32*)

Louser, Herman W., Director, Dept. of Parks & Public Property, City Hall, Lebanon, Pa. (Jan. '45)

Luton Water Co., Philip Robert Jeffcoate, Joint Engr., Crescent Rd., Luton, Beds, England (Corp. M. Jan. '45)

Mariner, W. S., Project Engr., Metcalf & Eddy, 1300 Statler Bldg., Boston 16, Mass. (Jan. '45)

McKillop, V. A., Asst. Mgr., Public Utilities Com., Dundus at Wellington, London, England (Jan. '45)

Mounsey, Robert J., Chemist, Water Dept., Water Plant, Lawrence, Kan. (Jan. '45)

Moses, Ina M. (Miss), Acting Secy.-Treas., Water Works Dept., Public Utilities Com., Mitchell, Ont., Can. (Jan. '45)

Niles, Chas. A., San. Engr., Suffolk County Dept. of Health, Riverhead, N.Y. (Jan. '45)

Nilmeier, Herbert Phillip, Instructor in Civ. Eng., Univ. of California, 11 Engineering Bldg., Berkeley, Calif. (Jan. '45)

Olsen, Edward A., Pres., New York Water Service Corp., 90 Broad St., New York 4, N.Y. (Jan. '45)

Ozbas, Halie, Hydr.-Civ. Engr., 3746—80th St., Jackson Heights, N.Y. (Jan. '45)

Paris Compagnie Générale des Eaux, G. Huvelin, Chief Engr., 52 rue d'Anjou, Paris (8), France (Jan. '45)

Philips, H. S., Cons. Engr., 63 John St., S., Hamilton, Ont., Can. (Jan. '45)

Prothro, W. B., *see* El Paso Health Dept.

(*Continued on page 36*)

(*Continued from page 34*)

Rocky Mount, Town of, Cecil Frith, Supt., Water Dept., Rocky Mount, Va. (Corp. M. Jan. '45)

Ryan, W. E., Supt., Ross Township Authority Water Service, R.F.D. 1, Allison Park, Pa. (Jan. '45)

Shell Chemical Div., Shell Union Oil Corp., A. C. Cornish, Tech. Asst., Utils. Dept., Box 211, Torrance, Calif. (Corp. M. Jan. '45)

Stewart, F. C., Cons. Engr., 1007 Dominion Bank Bldg., Vancouver, B.C., Can. (Jan. '45)

Synan, John F., Sales Development Dept., Mathieson Alkali Works, Inc., 60 E. 42nd St., New York 17, N.Y. (Jan. '45)

Taylor, C. H., Salesman, Neptune Meters, Ltd., Long Branch, Ont., Can. (Jan. '45)

Vincent, G. P., Mgr., Sales Development & Tech. Service Dept., Mathieson Alkali Works, Inc., 60 E. 42nd St., New York 17, N.Y. (Jan. '45)

Waddell, Wm. J., Salesman, Neptune Meters, Ltd., Long Branch, Ont., Can. (Jan. '45)

Washburn, Cy, Jr., Chief Engr., Utilities Bldg., Jacksonville 2, Fla. (Jan. '45)

West, George H., Water Plant Supervisor, Gulf States Utilities Co., Drawer 892, Lake Charles, La. (Jan. '45)

West Virginia Manufacturers Assn., Marrs Wiseman, Acting Secy., 506 Security Bldg., Charleston 30, W.Va. (Corp. M. Jan. '45)

Wheatly, William D., Chemist, Pittsburgh Plate Glass Co., Crystal City, Mo. (Jan. '45)

(*Continued on page 38*)

MARCH 1944 JOURNALS

The Association is holding in reserve complete volumes of the JOURNAL for war-devastated libraries, foreign subscribers and some members serving overseas. There is a shortage of March 1944 JOURNALS. These are urgently needed to complete the sets of Volume 36. Fifty cents will be paid for each copy bought. If you have a copy available, send a postal card indicating your willingness to sell it to:

American Water Works Association, Inc.
500 Fifth Avenue New York 18, N. Y.

(*Continued from page 36*)

Wilson, James F., Sr. Utilities Engr., California R.R. Com., 708 State Bldg., Los Angeles 12, Calif. (Jan. '45)

Wiseman, Marrs, *see* West Virginia Manufacturers Assn.

Wright, M. V., Dist. Chemist, Phillips Petroleum Co., Box 989, Oklahoma City, Okla. (Jan. '45)

REINSTATEMENTS

Burgess, R. V., Town Clerk, Leaside, Ont., Can. (Apr. '41)

Joiner, W. N., Water & Sewer Supt., San Marcos, Tex. (Jan. '35)

Van Brunt, J. K., Wallace & Tiernan Co., Inc., 25 Union Ave., Manasquan, N.J. (July '38)

LOSSES

Death

Darrow, Henry D., Supt., Water Works Dept., 408 Broadway, Kingston, N.Y. (Jan. '36)

Resignation

Apgar, Paul N., Supt. of Mains & Services, Water Dept., City Hall, East Orange, N.J. (Affil. Oct. '38)

Changes in Address

Changes of address between March 15 and April 15, 1945

Alderman, Frank E., c/o Holmes & Narver, 639 S. Spring St., Los Angeles, Calif. (Oct. '39) *M*

Ayala H., Juan Pablo, Departamento de Purificación de Aguas, Ministerio de Obras Públicas, Caracas, Venezuela, S.A. (Jan. '41)

Clark, Arthur T., Secy.-Mgr., Water & Sewage Works Manufacturers Assn., Inc., 170 Broadway, New York 7, N.Y. (May '19)

DeMartini, Frank Edward, San. Engr., U.S. Public Health Service, E. 3rd & Kilgour Sts., Cincinnati 2, Ohio (Sept. '27) *P*

Deo, R. R., Chief Chemist, Paterson Engineering Co. (India), Ltd., Box 26, Civil Lines, Nagpur, India (Oct. '38)

(*Continued on page 40*)

(*Continued from page 40*)

Insull, William, 202 S. Church St., Bowling Green, Ohio (Jan. '41) *M*

Jacklin, T. W., Vice-Pres. & Director, *Engineering Contract Record,* 75 E. Wacker Drive, Chicago, Ill. (Jan. '41)

Luquire, Joseph W., Jr., Engr., 204 Morgan Ave., Mobile 18, Ala. (July '44)

Maier, Franz J., San. Engr., U.S. Public Health Service Dist. No. 2, State Planters Bank Bldg., Richmond 19, Va. (Jan. '41) *MP*

Meyer, Norcliffe S., 1318½ Meander, Abilene, Tex. (Jan. '44)★

Oeffler, W. A., San. Engr., Vigo Plant C.W.S., Terre Haute, Ind. (Jan. '37)

Patterson, J. R., 28 E. Cedar Ave., Webster Groves 19, Mo. (Jan. '45)

Pearl, Emanuel H., 2423 Anniels Drive, Dallas 11, Tex. (Jan. '37)★

Porter, S. J., 136 Brentwood Ave., San Francisco 12, Calif. (Oct. '37)

Poulter, A. F., Engr. (R), 212 Oregon Bldg., Portland 4, Ore. (Jan. '37) *MP*

Ribner, Morris, 1st Lt., Medical Section, APO 340, c/o Postmaster, New York, N.Y. (July '43)★

Rohan, George J., Pres., The Rohan Co., Inc., Box 887, Waco, Tex. (Jan. '35) *Director '39–'42.*

Samuel, Thos. D., III, Box 549, Greenville, Miss. (July '44) *P*

Tetzlaff, Frank, 4209 Smithdeal Ave., Richmond 24, Va. (Jan. '36)

Thoman, John R., Box 53, Grenada, Miss. (Jan. '41)

Thuma, Ross A., Supt., Water Filtration Plant, 1900 Rice St., St. Paul 6, Minn. (Mar. '25) *Director '41–'42. P*

Treanor, Earl E., 6425 Morningside Drive, Kansas City 5, Mo. (Jan. '44)

Weir, T. J., Sales Repr., Crane Co., Los Angeles, Calif. (Jan. '41)

Wilmot, W. G., 215 W. 21st St., Corvallis, Ore. (Apr. '44) *MP*

MEMBERS ENTERING MILITARY SERVICE

Lowe, Harry Nicholas, Jr., 109 W. Mason Ave., Alexandria, Va. (Apr. '44)★

Shephard, Robert O., 2716—7th St., Meridian, Miss. (Jan. '43) *M*★

(Continued from page 24)

"The National Fire Codes for Flammable Liquids, Gases, Chemicals and Explosives" has been released in a new edition by the National Fire Protection Assn., 60 Batterymarch St., Boston. This supersedes the 1943 edition, and contains 592 pages, 6 × 9 in., bound in red cloth and priced at $3.00. Of particular value during these war times, it conveniently assembles, under one cover, the many standards dealing with these fire hazards and specifies measures that will assure reasonable safety without great expense or inconvenience.

Marvin A. Joy, formerly Sales Mgr. of the Midwestern Div., Chase Brass & Copper Co., Waterbury, Conn., has been appointed Asst. Gen. Sales Mgr. of the Mill Div., Waterbury. **Walter E. Evans,** who since 1940 has been Sales Promotion Mgr. at Waterbury, has been transferred to Cleveland, where he will take over the work formerly carried on by Joy. **John S. Coe,** formerly Asst. to the Sales Mgr. of the Mill Div., has gone to Cleveland to be Asst. to the Vice-Pres. in charge of Cleveland operations.

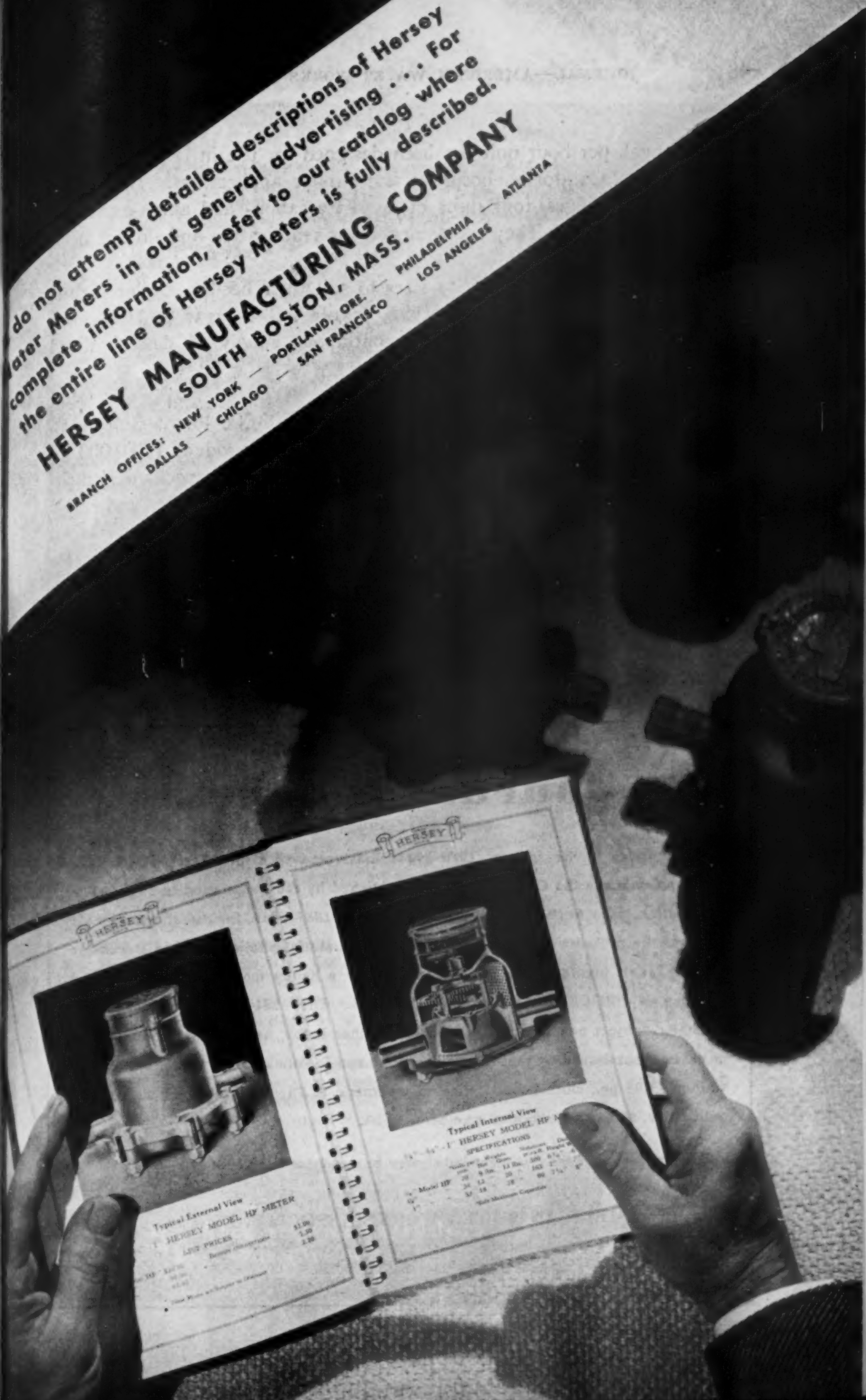
(Continued on page 46)

(*Continued from page 44*)

The Filt-R-Stil, a device which has been placed on the market by the American Cyanamid and Chemical Corp., transforms ordinary water into the chemical equivalent of distilled water by filtering it through beds of melamine-derived and other resins. Ion-exchange transforms the dissolved salts in the water to the corresponding acids and in turn absorbs the acids. The final demineralized water has an average salts content as low as 2 ppm. as calcium carbonate, and has been produced as pure as 0.5 ppm. The process also removes dissolved carbon dioxide, thus being of importance to the electronic and electrical field.

The Filt-R-Stil comes in three sizes. The smallest is available for field use by the Armed Forces, where it is used to demineralize water for storage batteries and for electronic equipment. The same size is also available as a bench unit, for use in filling stations, drug stores, photographic studios, chemical laboratories and elsewhere where small quantities of pure water are needed. These units produce 8 to 10 gal. per hour. Their ion-exchange resins are in cartridge form and may be renewed when exhausted. An automatic shut-off indicates when renewal is required.

(*Continued on page 48*)



do not attempt detailed descriptions of Hersey
ater Meters in our general advertising . . . For
complete information, refer to our catalog where
the entire line of Hersey Meters is fully described.
HERSEY MANUFACTURING COMPANY
SOUTH BOSTON, MASS.
BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA
DALLAS — CHICAGO — SAN FRANCISCO — LOS ANGELES
HERSEY
Typical External View
HERSEY MODEL HF METER
LIST PRICES
HERSEY
Typical Internal View
HERSEY MODEL HF
SPECIFICATIONS

(*Continued from page 46*)

A 30-gal. per hour unit has been designed for use in larger chemical and research laboratories, hospitals and similar applications. Instead of replaceable cartridges, four units of alternate cation- and anion-exchange resins are provided. They are equipped for reactivation and do not need to be replaced.

Industrial users may specify sizes to suit their needs. Boiler plants, oil refineries, synthetic rubber plants, textile mills, sugar and chemical industries, etc., may thus obtain a continuous supply of demineralized water or other liquids.

Calgon, Inc., has announced the sale of 500,000 lb. of Calgon to the Army Quartermaster Corps. It will be used to produce 1,250,000 lb. of Calgonite, which is Calgon plus a detergent, for use in mechanical dishwashers. Calgon is commercial sodium hexametaphosphate and it is claimed that it cuts the tough soap film which adheres to otherwise washed and rinsed dishes and to dishwashing machines. This film retains bacteria of the intestinal and respiratory groups, and the avoidance of it has materially reduced disease in the Army, Calgon, Inc., states.

(*Continued on page 50*)

(*Continued from page 48*)

Hyde-Ro Ring is a new product being introduced by the Atlas Mineral Products Co. of Mertztown, Pa., manufacturers of "Tegul Mineralead." The Hyde-Ro Ring is a rubber ring for packing B & S cast-iron pipe joints, and is supposed to have the advantages of being sterile, economical, water-tight and convenient to handle and to store. It is manufactured for 4-in., 6-in., 8-in., 10-in. and 12-in. cast-iron pipe.

The National Board of Fire Underwriters has established a division of research which will operate as a part of its Eng. Dept., under the general supervision of the Committee on Fire Prevention and Engineering Standards and the direct control of Gen. Mgr. Mallalieu and Chief Engr. George W. Booth.

Mathew M. Braidech, Prof. of Indus. and San. Chemistry at Case School of Applied Science, Cleveland, has been engaged as Director of Research and will report for duty at the NBFU office in New York on June 1.

Activities of the new division will include problems connected with fire and related hazards of industry and commerce; materials of construction and method of their use; and protective methods in safeguarding life and property.

(*Continued on page 54*)

(Continued from page 50)

"Flo-Watch," product of Builders-Providence, Inc., Div. of Builders Iron Foundry, Providence 1, R.I., is described in their new bulletin 318B, available on request. The Flo-Watch Recorder uses standard 12-in. diameter charts, and may be equipped with indicator and/or totalizer.

The Dresser Industries, Cleveland, of which the Dresser Mfg. Co., Bradford, Pa., is the parent company, has acquired three new companies, located in California: Day & Night Mfg. Co., Monrovia, makers of gas-fired water heaters; Payne Furnace & Supply Co., Beverly Hills, producers of steel furnaces and floor furnaces for the consumer durable goods field; and Kobe, Inc., Huntington Park, producers of revolutionary-engine-driven pumps for oil wells.

"Municipal Finance News Letter" for March 16 affords the following information concerning federal excise taxes:

Several questions have been asked about the exemption of state and local governments from the Federal excise tax on tires and tubes attached to new trucks or cars. One city purchased a truck listed at $973.77. Although the

(Continued on page 58)

(*Continued from page 54*)

tax is 5 per cent the rebate allowed was only $33.93 because no rebate was made on the tires and tubes. The U.S. Bureau of Internal Revenue advises that the sale of automobiles or trucks originally equipped with tires and tubes are not regarded as sales of tires and tubes as such, and therefore that there is no provision in law for a refund in case of purchase by a state or municipal government. The Bureau takes the position that the manufacturer is not allowed to buy tires and tubes tax free and that tax has been paid on these items before they are put on truck or car. See Sec. 316.54 of Regulation 46 of the Bureau. However, when tires and tubes are purchased separately from new equipment the rebate should and will be allowed. Cities usually deduct Federal excise taxes from invoices before payment and submit an exemption certificate to their supplier in place of the amount deducted.

"Rustop," the cathodic protection system installed by the Electro Rust-Proofing Corp., Dayton, Ohio, is credited with having saved the clarifier at Ashland, Ky., when the Ashland Water Dept. found that its clarifier mechanism was corroding and deteriorating at an alarming rate. Periodic inspections have demonstrated that the submerged metal surfaces are now escaping the action of the highly corrosive water, which is drawn from the Ohio River.

(*Continued on page 60*)

(*Continued from page 58*)

When the Associated Press sent the following story over its wires on March 2, there seemed to be some doubt that *water* was the supply discussed:

Elizabeth, N.J.—A meeting of municipal water experts was held here yesterday to discuss a proposed new state water supply program. Elizabeth sent its city engineer—Tom Collins. Perth Amboy was represented by its borough engineer—Louis Booz.

This "postwar plan" was aired in a recent issue of the New York World-Telegram by an inveterate writer of "Letters to the Editor":

Would Install Heat Coils Under Streets

It seems to me that a good postwar project would be the installation of radiant heat coils under the streets of the city. The hot water circulating through the pipes would melt the falling snow before it had a chance to turn to ice.

The number of accidents due to slippery streets would thereby be minimized, the project would provide employment for a great many people.

It would eventually solve the snow removal problem.

But would it stop the snow from flying?

(*Continued on page 64*)

NEWS OF THE FIELD

This year is the first since the Association was founded in 1881 that there has been no annual convention held. Owing to Office of Defense Transportation rulings the conference was cancelled, and most section meetings have been replaced by regional meetings, planned to involve a minimum of travel and make a limited demand on hotel accommodations.

The officers of the Association who would normally be inaugurated at the conference will take office on July first, as provided in the A.W.W.A. constitution. The new officers are:

Leonard N. Thompson, President. Thompson has been Gen. Supt. and Engr. of the St. Paul, Minn.; Water Dept. since 1929. A native of St. Paul, where he was born in 1888, he attended Ripon College, Ripon, Wis., from which he was graduated in 1911. During the next five years he was Engr. with the Omaha Railway and with the St. Paul Water Dept. During the first World War he went to Washington to serve as Designing Engr. in the U.S. Air Service, but he returned to the St. Paul Water Dept. in 1920 to be put in charge of design and construction of the filter plant, softening plant, reservoirs, supply conduits, etc. For two years, 1927–28, he was affiliated with the private contracting firm of D. W. Moore & Thompson.

(Continued on page 2)

THOMPSON

LADUE

BRUSH

(Continued from page 1)

In 1934, Thompson was Chairman of the Minnesota Section and from 1936 to 1939 represented the Minnesota Section on the A.W.W.A. Board of Directors. He is Chairman of the Committee on Joint Administration and Collection of Water and Sewer Accounts. Last year he was Vice-President of the Association under Samuel F. Newkirk Jr., whom he now succeeds.

Wendell R. LaDue, Vice-President. LaDue is Supt. and Chief Engr. of the Akron, Ohio, Bureau of Water and Sewerage, with which he has been since 1919. He was born in Ohio in 1895 and was graduated from the Univ. of Southern California with a Civ. Eng. degree. During the First World War he was in the Navy, working on design and tests of submarines and destroyers, thus initiating his professional association with water. At Akron he has been, successively, draftsman, designing engineer and, for the past ten years, Supt. and Chief Engr. responsible for engineering and operation, maintenance and expansion of water works; since 1942 he has added to these responsibilities the directions of engineering operations and maintenance of the sewerage and sewage disposal system.

LaDue was a Trustee of the Central States Section in 1934–37, and in 1938 was one of the instigators in the formation of the Ohio Section, served as Chairman during its first year, and was a Director from the section for the 1940–42 term. He has been Chairman of the Committee on Municipal Water Works Organization since 1941. In 1940 he was Chairman of the Special Committee on the Hill Cup Award and in 1943 was Chairman of the Fuller Award Society, having been a recipient of the Fuller Award in 1939. He is a member of the Publication Committee, the Committee on Water Works Practice and the Subcommittee on Distribution System Safety. He succeeds Thompson as Vice-President of the Association.

William W. Brush, Treasurer. Brush has been elected to the post of Treasurer for his fifteenth successive term. A Past-President and Honorary Member, Brush is Editor of *Water Works Engineering* and was formerly Chief Engr. of the New York Board of Water Supply.

(Continued on page 4)

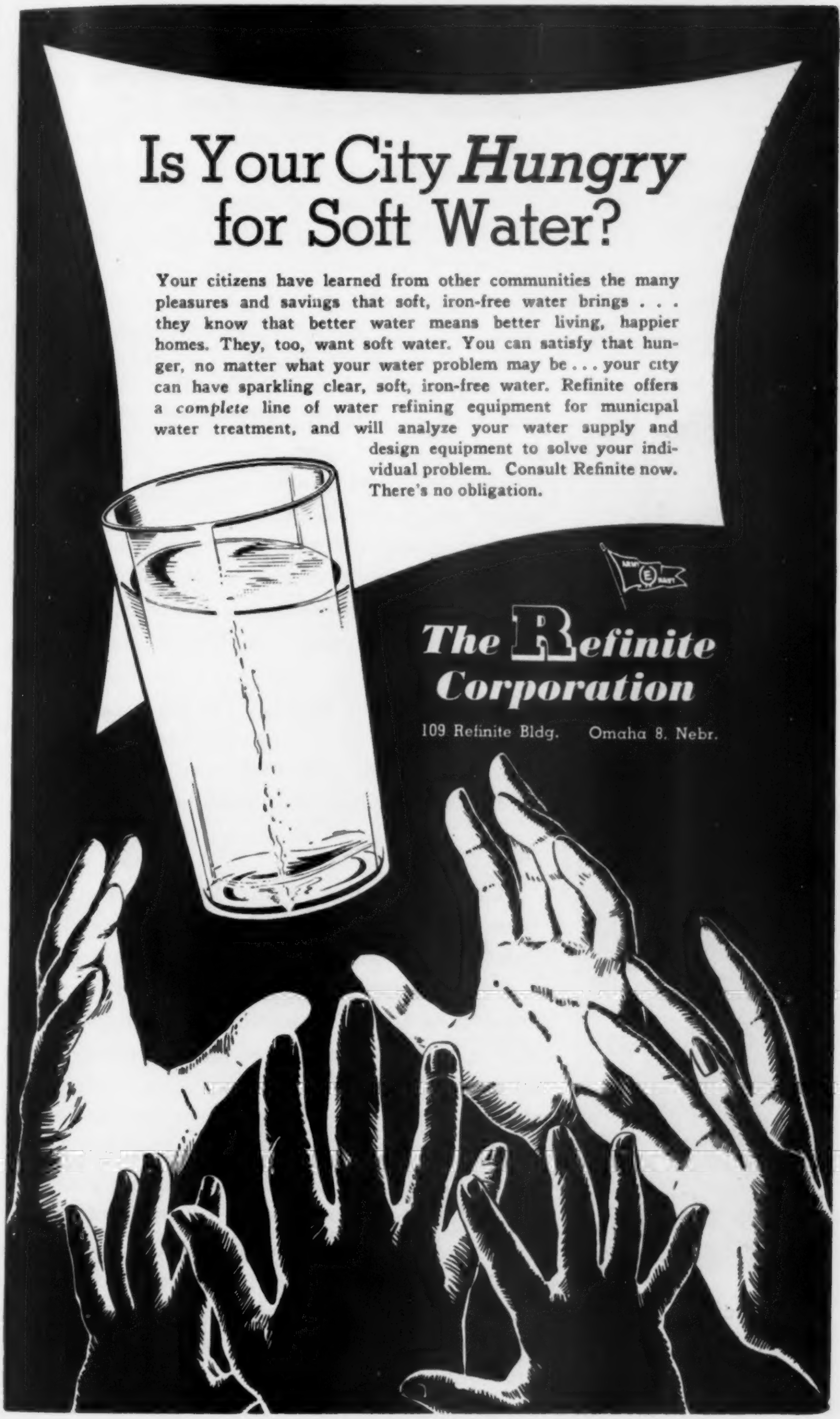
(*Continued from page 2*)

Section Directors who will take office on July first are:

Raymond F. Goudey, California. Goudey is San. Engr. in the Los Angeles Dept. of Water & Power. Born in Everett, Mass., in 1894, he went in 1917 to the California State Dept. of Public Health as Eng. Asst. armed with a Bachelor of Science degree from M.I.T. With time out to serve as Lieutenant in the Sanitary Corps, in 1918–19, he was successively Chief Chemist and Bacteriologist, Asst. Engr. and Southern Div. Engr., in which posts he had extensive experience in inspection, surveys, estimates, etc., of water and sewerage plants. In his present position he has been responsible for the design and construction of the Wilmington Filtration Plant, a number of chlorination plants, and the bacteriological, chemical, microscopical and spectographic laboratories for control of the Los Angeles water supply. He is the inventor of a method of scattering dry copper sulfate for algae control in reservoirs and a machine for measuring ultra-violet ray radiation. Goudey was a charter member of the California Section, of which he was Chairman in 1932–33. He has served on the Committees on Safe Handling of Water Works Chemicals, Distribution System Safety, Schools for Operators and Determination of Fluorides; and is now a member of the Committees on Cross-Connections and on Chemical Problems of Water Distribution Systems.

Manuel J. Puente, Cuba. Puente is a consulting engineer in Havana, a member of the firm of Puente & García Montes. He was born in Santiago in 1893 and received B.A. and B.S. degrees at the Institute there in 1912. In 1917 he was graduated from Syracuse Univ. as an Electrical Engr. and during his student days in the United States worked in the East Pittsburgh Westinghouse shops. In October 1917 he returned to Cuba and from then until 1924 did electrical engineering work with various sugar companies. After a year and a half as an independent sugar producer, he joined the International Brewing Co. of Cuba as Chief Engr. From 1931 to 1940 he was Resident Engr. Inspector for the Fuller Construction Co. of New York on the construction of and, later, as Supervising Engr. of the

(*Continued on page 6*)


Is Your City *Hungry* for Soft Water?
Your citizens have learned from other communities the many pleasures and savings that soft, iron-free water brings . . . they know that better water means better living, happier homes. They, too, want soft water. You can satisfy that hunger, no matter what your water problem may be . . . your city can have sparkling clear, soft, iron-free water. Refinite offers a *complete* line of water refining equipment for municipal water treatment, and will analyze your water supply and design equipment to solve your individual problem. Consult Refinite now. There's no obligation.
The Refinite Corporation
109 Refinite Bldg. Omaha 8, Nebr.

(*Continued from page 4*)

National Hotel of Cuba. In these capacities he supervised the installation of all electrical, mechanical, sanitary and water facilities, including steam boilers, a 0.4-mgd. zeolite plant and storage tanks. From 1929 to 1934 he was Cons. Engr. for the city of Havana, reorganizing the Bureau of Gas, Electricity and Mechanical Installations, and for the next two years was Technical Director of the Havana Water Works, having the supervision of the 80-mgd. system. In 1936, he began his private consulting practice, and was engaged by Havana to co-author a plan for the complete rehabilitation and expansion of the water works system at a cost of $15,000,000.

William B. Gibson, Florida. Gibson has been Supt. of Utilities, Fort Myers, Fla., for the past three years. He was born in Columbus, Ga., in 1907, and studied at Newton, Ala., Institute and Louisiana State Univ. After five years as house foreman with a sugar company in Florida he became Supt. of the Water Treatment Plant at Fort Myers, in which post he served for eight years. In 1941 he represented the Johns-Manville Sales Corp. in Florida and the next year was appointed to his present position. Gibson was a Trustee of the Florida Section in 1938–40 and Chairman in 1941. He was chairman of a committee which drew up the Florida licensing plan for water works operators.

Carl J. Lauter, Four States. Lauter is Chem. Engr. in the U.S. Engineers Office, Washington, D.C., with which he has been since 1922. At first in charge of purification and Director of Research of the Washington water supply, since 1925 he has been engaged in special researches on coli aerogenes media. Recently he has collaborated with the Engineering Dept. on future designs and operation of water treatment plants. He is a private consultant on swimming pools and miscellaneous sanitation. Born in Quincy, Ill., in 1889, Lauter holds B.S. and M.S. degrees in Chem. and San. Eng. from the Univ. of Illinois. Before World War I he was Asst. Prof. of Chem. at the Univ. of Illinois and the Univ. of Wisconsin. During the war he was Naval Ordnance Inspector of steel foundries in Milwaukee. In 1935, Lauter

(*Continued on page 8*)

(*Continued from page 6*)

was Pres. of the Maryland-Delaware Water & Sewerage Assn., and in 1940–41 served the same group as Secy.-Treas. He was chairman of the Four States Section in 1939, and in 1937 was chairman of the Association's Water Purification Div. He is a recipient of the Fuller Award.

Jesse J. Woltmann, Illinois. Woltmann is a consulting engineer in Bloomington, Ill. He was born in Nokomis, Ill., in 1888 and holds two degrees in Civ. Eng. from the Univ. of Illinois. After graduation, he became City Engr. for the cities of Anna and Nokomis, which post he held for seven years and during the same period he served on assignments with a construction company at several Army installations and with the Constr. Div. of the Army in Washington, D.C. He has been in private practice in Bloomington since 1921, engaged on water works and sewerage projects. From September 1943 to December 1944 he was Acting Chief of the Illinois State Water Survey, during the Army service of Arthur M. Buswell. Woltmann was Vice-Chairman of the Illinois Section during 1932–33 and chairman for the following term.

Herbert S. Grove, Minnesota. Grove is Gen. Mgr. of the Board of Water Comrs., Stillwater, Minn. Born in Nebraska in 1891, he received his education in Stillwater where he was Plant Engr. from 1906 to 1918, Asst. Engr. in 1918–29, and Supt. and Engr. from that time until his appointment as Gen. Mgr. in 1938. Grove served his section as trustee in 1941–42, and was vice-chairman in 1943 and chairman the next year. He has acted as chairman of the Water Works School for Continuation Study, Univ. of Minnesota, and is the author of several publications.

(*Continued on page 10*)


THERE'S A STRING OF THEM NOW
ACROSS THE COUNTRY
Producing Clear, Soft, Iron-Free Water for Many Municipalities
When it's reconversion time, there will be new materials, methods and ideas to be developed and perfected and molded into useful equipment . . . equipment which eventually will find application in important beneficial public works improvements.
In the Water Conditioning Field, however, there is no need to wait for this "miracle" equipment to materialize because
ACCELATORS had already gone through the developing and trying-out stage before the war. There's a string of municipal Accelator installations across the country now
ACCELATORS are doing a lot of different things for a lot of different kinds of water . . . clarifying . . . softening . . . stabilizing . . . removing color . . . taking out iron.
Results are always excellent . . . frequently remarkable.
You can't beat ACCELATORS for Performance and Economy. Would you like Bulletin 1824?
INFILCO
INFILCO
INCORPORATED
325 W. 25th PLACE, CHICAGO 16, ILL.

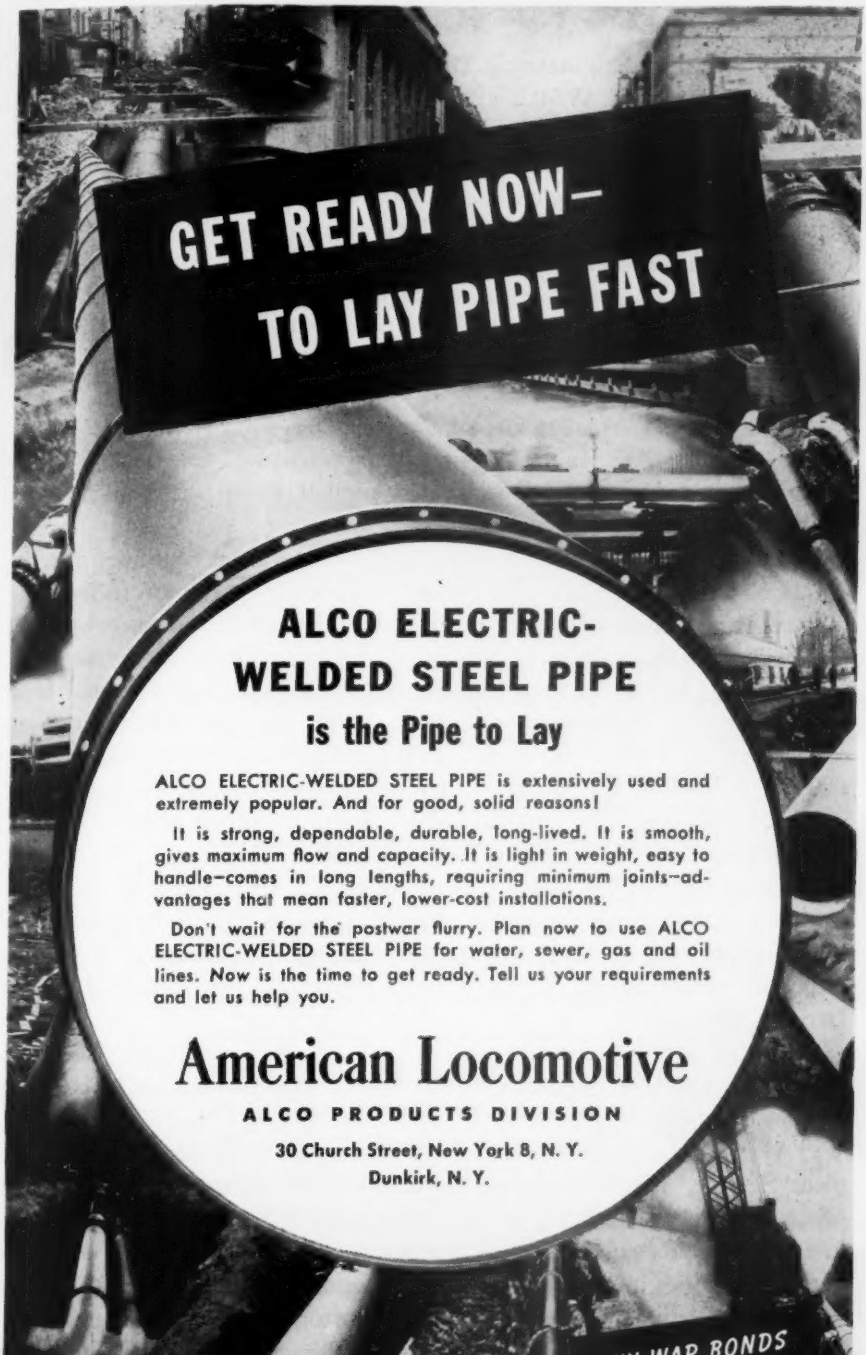
(*Continued from page 8*)

J. R. Cortese, Montana. Cortese is Engr. and Water Supt. of Livingston, Mont., where he planned and constructed the water supply system. Born in New York City in 1890, he was educated in St. Paul, Minn., and at Marquette Univ., Milwaukee. He was engaged in the mining industry in Idaho and Montana before going to Livingston. A member of the A.W.W.A. for the past twenty years, he was Vice-Chairman of the Montana Section in 1930 and Chairman the following year.

Harvey P. Jones, Ohio. Jones has been a consulting engineer in Toledo, Ohio, since 1926; from 1926 to 1944 under the name of H. P. Jones & Co., and since 1944 as partner of Thomas B. Henry in the firm of Jones & Henry. In 1918–26, he was manager of the mid-west office of Fuller & McClintock, Cons. Engrs., New York City. For two years before that he was Toledo San. Engr. He was born in Illinois in 1891 and took a B.S. in engineering at the Univ. of Michigan in 1916. Jones, who has been a member of the Association for 23 years, has served as Chairman and on the Board of Trustees of the Ohio Section.

Albert R. Davis, Southwest. Davis has been Supt. of the Austin, Tex., Water Dept. since 1921. A native of DePauw, Ind., he studied at Taylor Univ. Academy and Indiana Univ. He was in military service in 1917–19, and rose through the ranks to a commission in Field Artillery. He completed his education after his return from France, and then took his first position, as Asst. Engr. to the Texas Fire Insurance Com. in 1920–21. During the thirties he was on Austin's Special Engineering Staff for PWA projects. Davis was a Trustee of his section in 1935 and served as Vice-Chairman in 1938, holding the chairmanship a year later. He is a member of the Association's Com. on Location Records and Maintenance of Mains and Services.

(*Continued on page 12*)


GET READY NOW–
TO LAY PIPE FAST
ALCO ELECTRIC-WELDED STEEL PIPE
is the Pipe to Lay
ALCO ELECTRIC-WELDED STEEL PIPE is extensively used and extremely popular. And for good, solid reasons!
It is strong, dependable, durable, long-lived. It is smooth, gives maximum flow and capacity. It is light in weight, easy to handle—comes in long lengths, requiring minimum joints—advantages that mean faster, lower-cost installations.
Don't wait for the postwar flurry. Plan now to use ALCO ELECTRIC-WELDED STEEL PIPE for water, sewer, gas and oil lines. Now is the time to get ready. Tell us your requirements and let us help you.
American Locomotive
ALCO PRODUCTS DIVISION
30 Church Street, New York 8, N. Y.
Dunkirk, N. Y.
BUY WAR BONDS

(*Continued from page 10*)

The Sanitary Engineering Division of the Procurement and Assignment Commission, WMC, will be thrown into reverse to facilitate the return of sanitary engineers to civilian life. The Division's Subcommittee on Personnel, appointed early in 1943, co-operated with the Army and the U.S.P.H.S. to: (1) determine the military and civilian needs for sanitary engineers; (2) develop a roster of all sanitary engineers; and (3) establish a well-balanced allocation to meet the military needs without depriving the civilian population of essential sanitary services. The roster eventually developed contained the names of 3,559 sanitary engineers, of whom 1,503 are commissioned officers (959 in the Army, 411 in the U.S.P.H.S. and 133 in the Navy).

State advisers, usually chief sanitary engineers of state health departments, classified 799 sanitary engineers as "essential" for the protection of civilian public health, and designated another group as "available" for military service.

Because of the success of this procedure it will be continued for the duration of the Pacific war and will be adapted for a program to facilitate "at the proper time" the release of sanitary engineers who are essential "to public health, welfare or interest." There will be three steps for justifying the release of such engineers: (1) A summary statement from the prospective employer, showing the need for sanitary engineering services of the officer concerned; (2) Certification by the state adviser that the release of the sanitary engineer is necessary in the interest of public health; and (3) The favorable recommendation of the Office of Procurement and Assignment Service, WMC. Application for release must be initiated by the officer concerned, who should submit documentary evidence in these three categories, through channels, to the Adjutant General, Separations Service, Munitions Building, Washington, D.C. Instructions are contained in War Dept. Circular No. 485, Sec. III, issued Dec. 29, 1944.

The adviser system will also provide a program for advising and counselling sanitary engineers as they leave the Services and return to civilian endeavor.

Available from the office of E. S. Tisdale, Procurement and Assignment Service, War Manpower Commission, Washington 25, D.C., is a mimeographed bulletin containing further details of the procedures to follow to qualify for release, as well as full descriptions of sanitary engineering opportunities in various fields from federal employment through private practice, a discussion of the rights and opportunities of veterans under the "G.I. Bill of Rights," and a complete list of the members of the Committee and the names of the state advisers.

(*Continued on page 14*)

(*Continued from page 12*)

Past-Pres. Samuel B. Morris, Gen. Mgr. and Chief Engr., Los Angeles Dept. of Water & Power, has announced a number of changes in his staff, due to the department's policy of retiring its employees when they reach the age limit. Laurence E. Goit moved into the position of Chief Engr. and Deputy Gen. Mgr. upon the retirement of William W. Hurlbut, who reached retirement age in December but was retained to assist Morris, who had assumed his position only a few months previously. Goit was succeeded by Burton S. Grant. Charles P. Garman, former Engr. of Station Design, has been made executive head of the power system, and William S. Peterson, former head of the Design and Construction Div., has been made Asst. Chief Electrical Engr.

Past-Pres. William W. Hurlbut, who retired as Chief Engr. of Water Works and Deputy Gen. Mgr. of the Los Angeles Dept. of Water & Power on March 31, was feted shortly thereafter by the publicly-owned utility which he served for 37 years. He was presented with a number of gifts, including a bound book of letters and telegrams from directors, past presidents and other officers of the A.W.W.A. and many men prominent in the water works field. It was tendered on behalf of the Association by C. P. Harnish, California Section Chairman.

Laurance E. Goit, who has been promoted from Asst. Chief Engr. of Water Works to Chief Engr. of Water Works and Deputy Gen. Mgr. of the Los Angeles Dept. of Water & Power, succeeding William W. Hurlbut, has been with the utility since 1924. He will administer a $190,000,000 plant which collects the waters of Owens Valley and Mono Basin and transports them some 300 mi. to serve the 1,750,000 people of the Pacific Coast metropolis.

Goit is a member of the A.W.W.A. Committee on Laying Cast-Iron Pipe and of the Committee on Pipeline Coefficients. He was awarded the Goodell Prize in 1937 for development of equipment for the application of protective coatings to steel water pipe. During World War I, Goit served as an ensign in the Naval Transport Service.

Burton S. Grant, who started at the Los Angeles Dept. of Water & Power as a draftsman 20 years ago, becomes one of the youngest executives in the organization as he assumes the duties of Asst. Chief Engr. of

(*Continued on page 16*)

(*Continued from page 14*)

Goit

Hurlbut

Grant

Water Works on May 1, succeeding Laurance E. Goit. Grant has been, successively, Office Engr., Personnel Officer of the water system, Asst. Engr. of the Aqueduct Div. and, for the past five years, Chief of the Aqueduct Div. As division head, he was responsible for the operation, maintenance and hydrography of all of the aqueduct system north of the San Fernando Valley.

Grant was born in Illinois in 1904 and has been a resident of California since 1923. He studied civil engineering at the Univ. of California at Los Angeles.

Capt. Donald C. Senges, Sn.C., has been transferred to a Malaria Control Detachment in Trinidad from his post as sanitary engineer on water and sewage problems in Puerto Rico. In civilian life, Captain Senges was in the Mission, Kan., office of the Permutit Co.

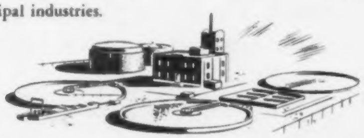
Bernal H. Swab has returned from an assignment under the Office of the Co-ordinator of Inter-American Affairs in Brazil, where he supervised the design and construction of a dike and drainage project to prevent tidal flooding of large areas in order to effect malaria control. He has now joined the staff of Jones and Henry, Toledo, Ohio, where he will be in charge of design of water and sewage treatment projects. Mr. Swab was formerly designing engineer for Wm. C. Olsen of Raleigh, N.C., and prior to that was City and San. Engr. of Altoona, Pa.

Mark B. Owen, former Director of the A.S.C.E. Com. on Postwar Construction, has become a partner in the Russell B. Moore Co., Cons. Engrs., Indianapolis 2, Ind.

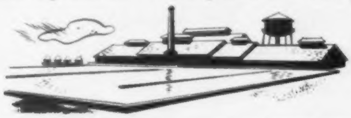
(*Continued on page 18*)

SYMBOL OF SERVICE

For almost half a century General Chemical products have been a familiar sight in American Industry. So numerous are their applications, and so vital their functions, that they have long been recognized as basic chemicals which help form the backbone of many principal industries.



Year after year purchasing and operation executives *select* and *specify General Chemical Products*, knowing that the quality and utility of these chemicals have been proved in production . . . meeting demands of the day.



Because General Chemical's research and manufacturing programs are both practical and progressive, they are geared to Industry's ever-changing requirements and anticipate its future necessities. That is why General Chemical products today are for today's processes . . . that's why General Chemical products of tomorrow will meet the new demands of the industrial world!

IMPORTANT GENERAL CHEMICAL PRODUCTS FOR WATER & SEWAGE TREATMENT

ALUMINUM SULFATE

Equally Efficient For Coagulation of Water & Sewage

Ammonia & Potash Alums • Aqua Ammonia • Anhydrous Bisulfite of Soda • Sodium Silicate • Sulfuric Acid • Disodium Phosphate • Trisodium Phosphate Tetrasodium Pyrophosphate • Sodium Fluoride Sodium Sulfite

BAKER & ADAMSON

LABORATORY REAGENTS and FINE CHEMICALS

GENERAL CHEMICAL COMPANY

40 RECTOR STREET • NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) Chicago • Cleveland • Denver • Detroit • Houston • Los Angeles • Kansas City • Minneapolis • New York Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • Seattle • St. Louis • Utica • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

(*Continued from page 16*)

Charles H. Eastwood, General Advertising Manager of Wallace & Tiernan and Associated Companies, Newark, N.J., died on April 27 in a hospital in Pasadena, Calif., after a relapse from a heart attack suffered six weeks previously.

Mr. Eastwood was born and educated in England and emigrated to Canada with his family as a young man. In World War I he went overseas with a medical unit of the Canadian Army and served with distinction, winning a number of decorations. Upon his return he became associated with the firm of Nordyke & Marmon, manufacturers of flour milling machinery, and in 1924 he joined the Wallace & Tiernan organization to work in their flour milling activities in the Southwest. Later he was manager of the district office in Jacksonville, Fla., and then was transferred to the head office in Belleville, N.J., where he was at first engaged in export sales and then became General Advertising Manager. He was also responsible for the management of the Decco Process (citrus fruit decay control) and, for several months during 1943 and 1944, the Flour Milling Service Division. However, during the past few years, he was seriously ill and in the fall of 1944 he was given a temporary transfer to California. His health was improving when the last heart attack occurred.

An Active Member of the A.W.W.A., Mr. Eastwood planned a membership drive early in 1935 which culminated at the Cincinnati Convention in April of that year and brought one of the largest increments of membership in the Association's history. He also made many other valuable contributions to the Association's promotional activities.

(*Continued on page 20*)

(Continued from page 18)

Robert E. Horton, Consulting Hydraulic Engineer, died of a heart ailment on April 22 at his home at La Grange's Mills, N.Y.

Mr. Horton was born 69 years ago at Parma, Mich., and received a Bachelor of Science degree from Albion College, Albion, Mich., in 1897. Thirty-five years later his alma mater awarded him a Doctor of Science degree. Mr. Horton's first job was as assistant engineer for the U.S. Deeper Waterways Commission. Two years later he became an assistant engineer in the U.S. Geological Survey, where he remained until 1906, when he accepted a post as engineer in the U.S. Hydraulic Survey. Since 1911 he had been in consulting practice, which included an appointment from 1911 to 1925 as hydraulic expert of the Department of Public Works and the Attorney General's Department of the State of New York. From 1922 until 1930 he represented the State of New Jersey before the United States Supreme Court in the Delaware River case, and in 1924–32 he was consulting engineer to the Board of Water Supply, Albany. He was consultant to a number of committees and commissions, and was chairman of the Board of Consultants, Flood Control, U.S. Department of Agriculture, from 1940 until his death.

Mr. Horton wrote eight technical books and 150 scientific papers on hydraulics, a number of which appeared in this JOURNAL, and was the inventor of a water-level gage and a joint for wood stave pipe. He was a Senior Member of the Association, having joined in 1911.

W. J. Whaley, Supt. of Water Works at Winder, Ga., for the past nine years, has been appointed Supt. of Water Purif. at Greenville, S.C. He succeeds Charles Floyd who retired because of ill health after 23 years with the Greenville Water Dept.

(Continued on page 22)

NOW pipes as small as 30 inches

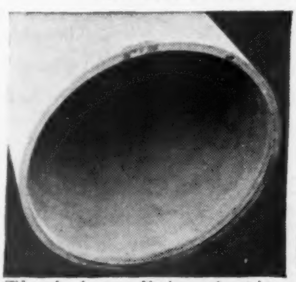
30" Lining Machine leaving a pipeline that has just been Centrilined

. . . reconditioned by Centriline

Here's good news! If the diameter of your pipeline is 30" or more . . . whatever its length . . . wherever situated —Centriline men and equipment can quickly reach and recondition it.

The Centriline process is a rapid and economical method of reconditioning pipelines. It consists of cleaning the main and applying by centrifugal force, a dense cement mortar lining of required thickness, mechanically troweled to a smooth finish. This new inner coating of protective cement will permanently resist the invasion of tuberculation and corrosion—and will restore and maintain a high carrying capacity.

Don't wait until it's too late . . . let Centriline clean and re-line your pipelines now. In that way you'll safeguard your initial investment.



The sleek new lining of a pipe that has been Centrilined

CENTRILINE PROCESS

CENTRILINE CORPORATION

142 Cedar Street, New York 6, N. Y.

RESTORES AND PROTECTS PIPE-LINE CARRYING CAPACITY

(*Continued from page 20*)

Ira E. Wilson, for the past 38 years Superintendent of the Faribault, Minn., Water Department, died on April 22 after a long illness.

Mr. Wilson was born in Missouri in 1869 and as a small boy migrated with his family to Oregon by covered wagon. He moved to Faribault in the 1890's and went to work as a day laborer for the city water department. In 1907 he was made superintendent of a plant with a bonded indebtedness of $80,000 and a book value of approximately $11,000. Under his hands, the department has come out of debt and now has investments of $61,700 and a book valuation of almost $600,000. Water main footage increased from 65,674 to 256,418. Control valves increased in number from 148 to 608, the 103 hydrants of 1907 have been doubled in number, and where there were 447 meters there are now 2,308. At the time of his death, Mr. Wilson was making plans for further extensions. He was self-educated and widely read in academic and engineering subjects.

(*Continued on page 24*)

MARCH 1944 JOURNALS

•

The Association is holding in reserve complete volumes of the JOURNAL for war-devastated libraries, foreign subscribers and some members serving overseas. There is a shortage of March 1944 JOURNALS. These are urgently needed to complete the sets of Volume 36. Fifty cents will be paid for each copy bought. If you have a copy available, send a postal card indicating your willingness to sell it to:

AMERICAN WATER WORKS ASSOCIATION, INC.

500 Fifth Avenue New York 18, N. Y.

(*Continued from page 22*)

Capt. Emil T. Chanlett, Sn.C., is now in Tegucigalpa, Honduras, working on an environmental sanitation project for the Institute of Inter-American Affairs, with which he has been since May 1943. In July and August of that year he was in Bolivia engaged in a health and sanitation study of Bolivian tin and tungsten mines, and for the next eighteen months worked on environmental sanitation in the Amazon River Basin under Dr. H. G. Baity and Major E. G. Wagner. For the two years subsequent to his graduation from the Univ. of North Carolina in 1941, Captain Chanlett was an Asst. San. Engr. (R) in the Div. of Industrial Hygiene, U.S.P.H.S.

Harold M. Dilworth, Field Engr. in charge of the development of water supplies for airports in western Canada, is now located in Edmonton, Alta., where he is supervising water supply and sewerage systems for all airports on the Northwest Staging Route between Edmonton and the Yukon-Alaska boundary. Dilworth, who has been with the Dominion government for the past five years, was formerly Township Engr. and Water Works Supt. of Etobicoke, Ont., the first municipality in Canada to install a zeolite water softening plant.

(*Continued on page 46*)

Changes in Membership

NEW MEMBERS

Applications received April 1 to 30, 1945

★ *denotes military service*

Allan, J. Lorn, Town Engr., Town Hall, Dartmouth, N.S., Can. (Apr. '45)

Arnold, Fay W., Operator, LaGrange Water Works, 56 N. Waiola Ave., LaGrange, Ill. (Apr. '45)

Benn, Hubert Sterne, Supt. of Works, Corp. of City of Vernon, Vernon, B.C., Can. (Apr. '45)

Coca Cola Export Corp., The, C. A. Shillinglaw, 515 Madison Ave., New York 17, N.Y. (Corp. M. Apr. '45)

Craven, W. L., Supt., Hatboro Borough Authority, Hatboro, Pa. (Apr. '45)

Ettington, Martin, Chief Engr., Alco Products Div., American Locomotive Co., 30 Church St., New York 8, N.Y. (Apr. '45)

Henry, Howard W., 1st Lt., APO 795, c/o Postmaster, New York, N.Y. (Apr. '45) ★

Hughes, Sydney E., Mech. Engr., 5739 Roberts Ave., Oakland 2, Calif. (Apr. '45)

Kells, Thomas J., Repr., Neptune Meter Co., 2118 Roosevelt Ave., Burlingame, Calif. (Apr. '45)

Kewanee, City of, Edwin F. Peterson, City Clerk, 200 W. 3rd St., Kewanee, Ill. (Corp. M. Apr. '45)

Knapp, Kenneth J., City Engr., 118 City Hall Annex, Rochester 4, N.Y. (Apr. '45)

(*Continued on page 30*)

(*Continued from page 28*)

Leggett, Ilow Waddell, Field Application & Service Engr., Worthington Pump & Machinery Corp., Box 1914, Charlotte, N.C. (Apr. '45)

Long Island State Park Com., Stanley J. Polek, Supt., Jones Beach State Park, Wantagh, N.Y. (Corp. M. Jan. '45)

Martin, Edward J., Jr., Cons. Engr., 21 N. Broadway, Tarrytown, N.Y. (Apr. '45)

McClellan, Thomas J., Asst. Engr., City of Corvallis, 11 Avondale Apts., Corvallis, Ore. (Apr. '45)

Myers, W. O., *see* Ottawa Water & Light Dept.

Ottawa Water & Light Dept., W. O. Myers, Supt., City Hall, Ottawa, Kan. (Corp. M. Apr. '45)

Peterson, Edwin F., *see* Kewanee, City of

Pippin, Lafe, Supt., Water & Elec. Dept., Neodesha, Kan. (Apr. '45)

Podas, Charles Robert, Cons. Engr., Pfeifer & Shultz, 702 Wesley Temple Bldg., Minneapolis, Minn. (Apr. '45)

Polek, Stanley J., *see* Long Island State Park Com.

Shillinglaw, C. A., *see* Coca Cola Export Corp., The

Stephan, Dean E., Mgr., Los Angeles Office, Chicago Bridge & Iron Co., 608 S. Hill St., Los Angeles 14, Calif. (Apr. '45)

Stewart, Wm. M., Owner, Soft Water Service, 227—3rd St., N.E., Canton 2, Ohio (Apr. '45)

Thalheimer, Marce, Mgr., Water Works, E. Pearl St., Batesville, Ind. (Jan. '45)

(*Continued on page 32*)

(Continued from page 30)

Williamson, Robert, Jr., Chief Engr., Metal Products Eng. Corp., Box 252, Charleston 21, W.Va. (Apr. '45)

LOSSES

Deaths

Crocker, J. R., Dist. Mgr., The Permutit Co., 523 B.M.A. Bldgs., Kansas City 8, Mo. (July '38) *P*

Eastwood, Charles H., Wallace & Tiernan Co., Inc., Newark 1, N.J. (July '35) *P*

Horton, Robert E., Hydr. Engr., R.D. No. 1, Voorheesville, N.Y. (Jan. '11)

McLure, J. H., City Engr., Chester, S.C. (Apr. '38) *P*

Mull, Charles H., Mgr., Vista Irrigation Dist., Vista, Calif. (Oct. '38)

Wilson, I. E., Water Comr., City Hall, Faribault, Minn. (Sept. '22)

(Continued on page 34)

(*Continued from page 32*)

Resignations

Bettis, Herman B., Mgr., Brown Co. Water Improvement Dist. No. 1, Box 118, Brownwood, Tex. (Jan. '44)

Lester, G. M., Pres., Hinds County Water Co., Box 369, Jackson 104, Miss. (Jan. '44)

Schwier, Harry, Mgr., Batesville Water Works, Batesville, Ind. (July '35) *P*

Tay, Samuel Wright, San. Engr., Holualoa, T.H. (July '20)

Zele, Alexander S., Chemist, Long Island State Park Com., Belmont Lake State Park, Babylon, N.Y. (Oct. '40) *P*

Changes in Address

Changes of address between March 15 and April 15, 1945

Acevedo-Quintana, F., Designing Engr., c/o J. Romero, 503 W. 111th St., New York 26, N.Y. (Jan. '41)

(*Continued on page 36*)

(*Continued from page 34*)

American Concrete Pipe Assn., M. W. Loving, Cons. Engr., 228 N. LaSalle St., Chicago 1, Ill. (Assoc. M. Oct. '17)

Anderson, R. V., Civ. Engr., 358 Whitmore Ave., Toronto 10, Ont., Can. (Jan. '44)

Baffa, John J., Hydr. & San. Engr., 140 Cedar St., New York 6, N.Y. (Jan. '44) *P*

Berk, Ralph G., Engr., Engineer Board, Fort Belvoir, Va. (July '41)

Brockway, P. L., *see* Wichita, City of

Buck, George H., Cons. Engr., 55 Cherry St., Elizabeth, N.J. (Jan. '26)

Conkling, Harold, Cons. Engr., 108 W. 6th St., Los Angeles 14, Calif. (Oct. '39)

Dose, Herman W., Route 2, Gainesville, Tex. (Apr. '44) *M*

Faw, Claude T., Box 865, Carmel, Calif. (Nov. '29)

Finley, Thomas R., 442 S. Cherokee Drive, Orlando, Fla. (Jan. '44)

(*Continued on page 38*)

(*Continued from page 36*)

Geupel, Louis A., 5012 Yorktown Rd., Green Acres, Md., Washington 16, D.C. (Nov. '22) *MP*

Green, Raleigh B., Supt., Water Works, Box 36, Dinuba, Calif. (Jan. '43) *M*

Grubb, Elmer K., Stowe, Pa. (Jan. '37) *M*

Hawkins, Karl W., 119 N. White St., Huntsville, Ala. (Apr. '44)

Henson, Frederick John, Prin. Engr., Air Installations Div., A/C, A/S., M & S., Hq., Army Air Forces, 5128 Loughboro Road, N.W., Washington 16, D.C. (Oct. '43)

Hodges, J. E., 11th Naval Dist., Public Works Dept., 1220 Pacific Highway, San Diego 1, Calif. (Oct. '43) *P*

Jensen, Emil C., 1412 Smith Tower, Seattle 4, Wash. (Jan. '42) *MP*

Jones, Ivan W., Supt., Hutchinson Water Co., Inc., 19 E. 2nd St., Hutchinson, Kan. (Jan. '45)

(*Continued on page 40*)

(*Continued from page 38*)

Jones, T. E., San. Engr., 310 Holly St., South Pittsburgh, Tenn. (Jan. '40) *M*

Justus, O. H., Water Works Operator, City Water Works, 611 Urban Ave., Vienna, W.Va. (Affil. Jan. '40)

Kavanagh, J. P., Dist. Mgr., Wallace & Tiernan Co., Inc., 915 Colonial-American Bank Bldg., Roanoke 11, Va. (Oct. '41) *P*

Killam, Elson T., Hydr. & San. Engr., 140 Cedar St., New York 6, N.Y. (Dec. '31)

Lewiston Pipe Co., Paul L. Osweiler, 106 N. Catherine St., LaGrange, Ill. (Assoc. M. July '43)

Luebbers, Ralph H., R. R. 1, Box 276, San Luis Obispo, Calif. (Jan. '36) ★

McGrath, Robert Louis, 103 Buchannan St., Taft, Calif. (Apr. '43)

McPeak, Douglas H., Station A, Box 462, Minneapolis, Minn. (Apr. '42) *P*★

(*Continued on page 42*)

Reprints Available

Recovery of Calcium Carbonate or Lime From Water Softening Sludges. By Robert T. Sheen and Herbert B. Lammers . . . .
Calcining Sludge From a Softening Plant. By H. V. Pedersen . . . .
Calcining Sludge From a Water Softening Plant. By C. W. Gordon . . . . . .
Recalcination of Water Softening Sludge. By F. G. Nelson 35c

THE FIRST TWO ARTICLES DESCRIBE ORIGINAL PROJECTS FOR THE RECOVERY OF CALCIUM CARBONATE FROM SLUDGE, PROFUSELY ANNOTATED WITH ILLUSTRATIONS AND TABLES; SHEEN AND LAMMERS DESCRIBE WORK AT THE WRIGHT AERONAUTICAL CORP. AND THE COLUMBIA STEEL CORP., WHILE PEDERSEN EXPLAINS HIS PROJECT ON A CONSUMERS' SUPPLY AT MARSHALLTOWN, IOWA. THE GORDON PAPER DISCUSSES SOME OF THE METHODS USED BY PEDERSEN AND THE NELSON PAPER PRESENTS SUPPLEMENTARY DATA RELATIVE TO THE PEDERSEN EXPERIMENTS AND CONTRIBUTES INFORMATION ABOUT TWO OTHER RECALCINATION PROJECTS.

Disinfection of New Mains. By Cecil K. Calvert . . . .
Bacteriology of Water Pipes. By Carl Wilson 15c

TWO VERY USEFUL DISCUSSIONS OF BACTERIOLOGY AND STERILIZATION. BASIC MATERIAL, YET USEFUL TO EVERY VETERAN OPERATOR.

Historical Development of the Fire Hydrant. By L. A. Jackson 30c

THE FIRST COMPREHENSIVE REVIEW OF THE DEVELOPMENT OF THE FIRE HYDRANT FROM ITS ORIGIN AS A PLUG IN A MAIN TO THE MODERN OUTLETS WHICH ARE STILL KNOWN AS "FIRE PLUGS." ILLUSTRATIONS HARK AS FAR BACK AS A FIRE-FIGHTING "SYRINGE" OF THE THIRD CENTURY, B.C.

Fabricated Steel Ring Flanges for Water Pipe Service for Low Pressures and Low Temperatures. By H. O. Hill, W. W. Lewis and H. J. Easter 25c

AN AUTHORITATIVE DISCUSSION OF THE DESIGN AND MANUFACTURE OF FLANGES IN SIZES NOT COVERED BY A.S.A. STANDARDS, BY THREE ENGINEERS OF THE BETHLEHEM STEEL CO. WITH SEVEN TABLES AND COMPLETE BIBLIOGRAPHY.

Canada's Ground Water Resources From a Geological Aspect. By B. R. MacKay 20c

A COMPREHENSIVE HANDBOOK ON CANADA'S GEOLOGY AS IT AFFECTS GROUND WATER SUPPLIES, ILLUSTRATED WITH MAPS SHOWING PHYSIOGRAPHY AND PREHISTORIC DEPOSITS.

Hydraulic Bookkeeping by the Bernoulli Method. By Louis Mitchell 15c

A TEACHER EXPLAINS THE BERNOULLI THEOREM BY ANALOGY—A MATHEMATICAL FORMULA OUT OF THE PHYSICS TEXT BOOKS IS PUT INTO TERMS WHICH ARE COMPREHENSIBLE AND USEFUL TO EVERY OPERATOR.

A. W. W. A.

500 Fifth Ave., New York 18, N.Y.

(*Continued from page 40*)

Middleton, Francis M., U.S. Public Health Service, Box 462, Biloxi, Miss. (Jan. '43) *P*

Newell, Clark, Box 565, Provo, Utah (July '28) *MP*

Phelps, A. Cooke, Auto Mechanic & Meter Repairman, 4231 Alta Rd., Venice, Calif. (Oct. '44)

Prindle, George B., Supt. of Water Works, Box A, Highland Park, Ill. (Mar. '24) *P*

Roberts, H. G., Dist. Mgr., Rensselaer Valve Co., 115 Townsend St., San Francisco 7, Calif. (Oct. '37)

Rogers, Milford E., c/o Builders-Providence, Inc., 9 Codding St., Providence, R.I. (Jan. '45)

Stewart, Morgan E., 1st Lt., Sn.C., APO 887, c/o Postmaster, New York, N.Y. (Jan. '44) ★

Stutz, C. N., 720 W. Mill St., Bloomington, Ill. (July '35) *P*

(*Continued on page 44*)

blic
Miss.

tah

&
Rd.,

rks,
) P

laer
San

ovi-
nce,

PO
.Y.

ng-

AD
and
l as

can
rms
l to

(*Continued from page 42*)

Swab, Bernal H., 606 Toledo Trust Bldg., Toledo 4, Ohio (Mar. '30) ★

Thoman, John R., Yazoo County Health Dept., Yazoo City, Miss. (Jan. '41)

Thornton, Gustavus, Cons. Engr., Box 148, Galveston, Tex. (Apr. '39)

Van Benschoten, Jay, V & M Products, 3104 Colorado Ave., Santa Monica, Calif. (June '23)

Weir, W. H., State Dept. of Health, 245 State Office Bldg., Atlanta, Ga. (Dec. '24) *Director '34–'37*

Wichita, City of, P. L. Brockway, Director of Service, City Bldg., Wichita 2, Kan. (Corp. M. Jan. '40)

MEMBERS ENTERING MILITARY SERVICE

Dahljelm, Irving L., Supt., Filtration Plant, 103 North Ave., Highland Park 3, Mich. (Jan. '38) *P* ★

Rihm, Alexander, 8566—80th St., Woodhaven, N.Y. (July '43) ★

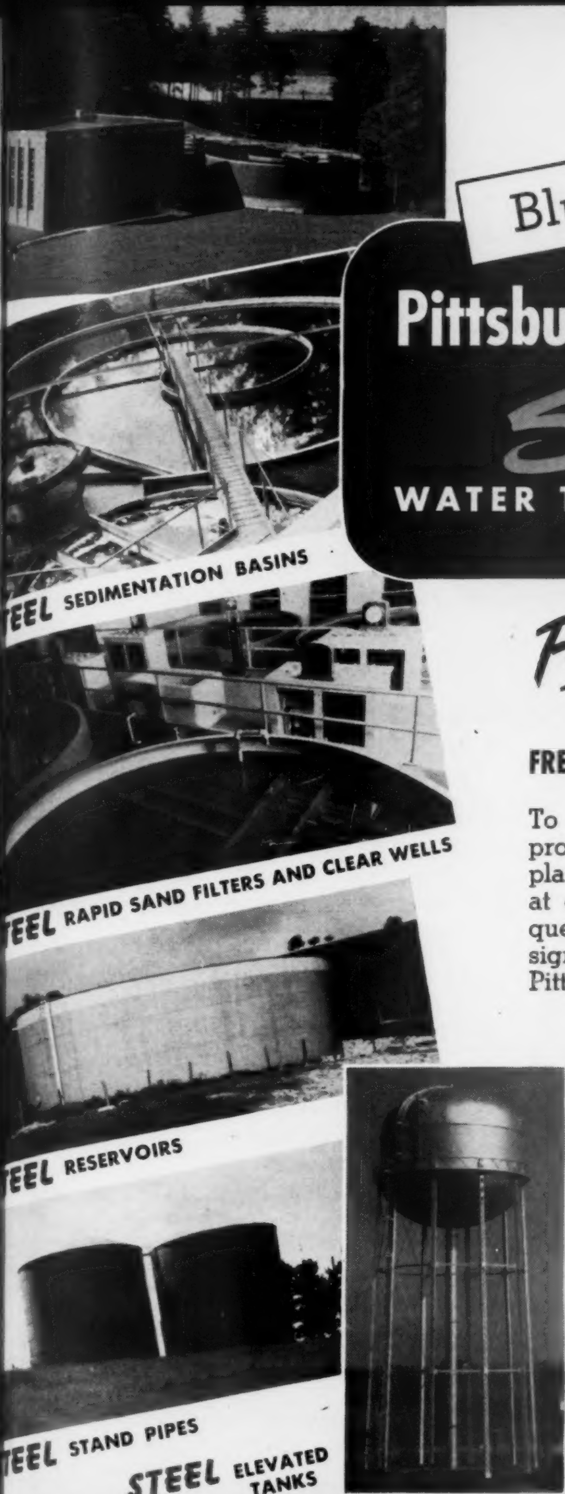
(Continued from page 24)

Lt.-Col. W. H. Weir has resumed his former civilian activities with the Georgia Dept. of Public Health, Atlanta. Colonel Weir entered the service as a Major in the Corps of Engineers early in 1942 and was at first posted in the Sixth Corps Area Hq., Chicago. He was later assigned to the Provost Marshall General's office with duties relating to sanitary engineering matters in war production plants. At the time of his release he was teaching in the Naval training program at Princeton Univ.

Ralph G. Berk has resigned his position as Chief Design Engr., Water Section, with Consulting Engineers, C.A., Caracas, Venezuela, and is now an engineer in the Water Supply Branch of the Engineer Board, Fort Belvoir, Va.

Clifford E. Alden, formerly associated with the Training Within Industry program of the WMC Philadelphia Regional Office, has been appointed to the engineering staff of the Foxboro Co., Foxboro, Mass., where he will specialize in the instrumentation of water works, sewage disposal plants and similar public works.

(Continued on page 48)


STEEL SEDIMENTATION BASINS
STEEL RAPID SAND FILTERS AND CLEAR WELLS
STEEL RESERVOIRS
STEEL STAND PIPES
STEEL ELEVATED TANKS

(*Continued from page 46*)

Vocational guidance aid to returning veterans who may look to engineering as a peacetime career and the announcement of a plan for accrediting educational programs of the technical institute type are among the current activities noted in the Twelfth Annual Report of the Engineers' Council for Professional Development, a joint conference of engineering bodies with headquarters at 29 West 39th St., New York 18. Guidance, particularly of an informational character, the committee has concluded, should be made available to high school principals and guidance officers, who, surveys indicate, want such information for veterans who seem to gravitate naturally to the facilities existent in their own localities.

A "Reading List for Junior Engineers" appears in the report and is available in separate pamphlet form.

The Crane Co., Chicago 5, has announced the promotion of P. R. Mork from the post of Vice-Pres. in Charge of Sales to Executive Vice-Pres. J. A. Dwyer, former Gen. Mgr. of Sales and Branches, has succeeded Mork as Vice-Pres. in Charge of Sales.

(*Continued on page 50*)

(*Continued from page 48*)

The Section of Hydrology of the American Geophysical Union is forming a Committee on Inter-Society Relations in which representatives of various fields interested in some phases of hydrology can come together for informal discussion of problems of mutual concern, without necessarily committing themselves to any formal plan. Probable participants in the committee will be the American Meteorological Soc., the American Soc. of Agric. Engrs., the American Soc. of Civ. Engrs., the A.W.W.A., the Geological Soc. of America, the Soil Science Soc. of America, the Soc. of Economic Geologists and the Soc. of American Foresters.

"Informal meetings are the aim of the new committee," according to J. E. Church of the Univ. of Nevada and Pres. of the Section of Hydrology of the A.G.U. "The spirit, rather than form, is desired."

N. B. Graham, formerly Vice-Pres. in Charge of Industrial Sales for Elgin Water Softener Co., recently became associated with the Graver Tank & Mfg. Co., Inc., in charge of water treating and process equipment sales in the Tampa, Fla., area.

(*Continued on page 52*)

(*Continued from page 50*)

Four members of the Wallace & Tiernan Co. Labor-Management Com. recently christened a hospital ambulance plane and five ambulances at the Oklahoma City, Okla., plant of the Douglas Aircraft Co. The equipment was bought through the sale of war bonds to Wallace & Tiernan employees during the Sixth War Loan Drive. The plane was named "Reporting Sir" for the bulletin sent regularly to Wallace & Tiernan employees in the armed forces, in ceremonies which coincided with the opening of the Seventh War Loan Drive at the Douglas plant.

The decrease in the typhoid fever hazard in upper New York State is described in a report in a recent issue of *Health News,* weekly bulletin of the New York State Dept. of Health:

A total of 480 typhoid carriers was under supervision in upstate New York at the close of 1944. Forty-one new carriers were added to and 35 were removed from the register during the year. Twenty-three were discovered as a result of epidemiological investigation of sporadic cases of typhoid; four, by means of release cultures;

(*Continued on page 54*)

(*Continued from page 52*)

ten accidentally, as a result of routine culturing; and one on the basis of information furnished by the New York City Dept. of Health. Three previously discovered carriers were added to the register; these carriers had been residing temporarily out of the state.

Of the 35 carriers whose names were removed from the register, 23 died; six were released from restrictions after the submission of the required number of negative fecal and duodenal specimens following cholecystectomy; while the names of six others were removed because of change of residence of the carrier to a community outside the jurisdiction of the department.

Noteworthy is the fact that only 97 cases of typhoid fever were reported to have occurred in the upstate area during 1944. Since the best evidence indicates that an average of 3 per cent of cases of typhoid fever become chronic carriers, it is assumed that not more than three chronic carriers will develop from these cases. On the other hand, during the same period 23 carriers died. These data indicate the extent to which the typhoid problem is diminishing in New York State.

The Buffalo Gasolene Motor Co., Buffalo 13, N.Y., manufacturers of internal combustion engines, have just issued Bulletin No. 316, describing and illustrating several of their installations. The pamphlet in four colors stresses the point that gas and gasoline engines provide trustworthy standby power in flood protection works.

(*Continued on page 56*)

(*Continued from page 54*)

The National Fire Protection Assn., 60 Batterymarch St., Boston 10, has recently published a paper-covered, 96-page book entitled "Airplane Crash Fire Fighting Manual" at $1.00 per copy. Accompanying descriptions of the technical details of how crashes occur and some of the causes is a discussion of fog and foam equipment.

To produce 1 lb. of butadiene, from which synthetic rubber is made, it is necessary to pump 1,200 lb. of water, to treat chemically 35 lb. of water for boiler use and to consume 20 lb. of steam. Morris Knowles, Inc., Cons. Engrs., Pittsburgh, was retained to make plans to fill these needs at Kobuta, a new synthetic rubber plant erected on the Ohio River 35 mi. from Pittsburgh by the Koppers United Co. The engineers designed a water plant which will withstand a flood stage 6 ft. higher than the crest reached in the disastrous flood of 1936. This means that the water would have to rise 32 ft. above the normal pool before pumping operations would have to be curtailed.

(*Continued on page 58*)

(*Continued from page 56*)

A new type of gasket, consisting of a felt base impregnated with a chromate-pigmented compound which renders the material flame- and fire-resistant as well as corrosion-resistant, has been announced by the Sherwin-Williams Co. Originally intended as a substitute for low-pressure rubber gaskets required in marine ventilating systems, chromate gasketing has since demonstrated its usefulness in many other applications, including joint seals in water, fuel oil and diesel oil systems as well as gasketing for air lock and refrigerator doors.

The Industrial Chemical Sales Div. of the West Virginia Pulp & Paper Co., has developed a lignin from pine wood which it calls "Indulin." Industrial Chemical Sales has available a descriptive bulletin which includes a very complete bibliography on the subject of the uses of lignin, including water treatment applications.

The introduction to the pamphlet, Bulletin L-1, states that:

(*Continued on page 60*)

(*Continued from page 58*)

Indulin is a lignin derived from pine wood by processes associated with a large sulfate paper pulp mill.

Indulin of two types is now available from an experimental plant capable of supplying quantities for experimental evaluations.

Indulin is produced by processes that are standardized to assure close specifications in properties.

Type C is a disodium salt of Type A.

Indulin C and Indulin A are brown, free flowing, amorphous powders of small-particle size which can be shipped in paper, wood or metal containers.

"X-Ray Diffraction—An Industrial Tool," is a 4-page booklet recently issued by the North American Philips Co., Inc., 100 East 42nd St., New York 17, N.Y. It explains the technic employed in Norelco film-type X-ray equipment for identification of materials.

Water works applications claimed for X-ray diffraction are: (1) Determination of covering quality of paint pigments; (2) Metallic deposition in formation of metallic carbides; and (3) Determination of character of metallic films.

NEWS OF THE FIELD

Section officers are responding to the opportunity to develop new types of meetings of their members so that the limits of the O.D.T. Committee on Conventions are not exceeded. The regional meetings recently held by the New York, Kentucky and Indiana members were eye-openers to everyone who participated.

The New York Section meetings covered four successive sessions of one day each in Rochester, Syracuse, Albany and White Plains. The report by Secretary Blanchard appears elsewhere in this issue and shows that the attendance of operating water works men was unprecedented and the interest was high. They were real meetings of minds.

The Kentucky members of the Kentucky-Tennessee Section held a two-day session in Kentucky University halls at Lexington. No prepared papers were read. Instead there were panels of five men each to lead the discussions. Here again the members present were in no way backward. Within thirty minutes after the first session opened, the discussion was just as active from the floor as from the panel. The subjects were: Distribution Problems, Pumping Station Problems and Water Purification Problems. The value that every person present derived from the meetings was evidence of the capacity of water works men to ask intelligent questions and get to the heart of their problems.

The Indiana Section has held a series of regional one-day meetings each autumn for nearly ten years and knows how to handle sessions at the grass-roots level. In the face of inability to hold the regular Section meeting this spring, a series of eight one-day meetings were held in mid-June. Here the program followed a regular pattern—a series of short papers each morning and free discussion of set topics each afternoon. Combined with these meetings were the ceremonies at which the John N. Hurty awards were presented. An account of these awards appears below.

The lessons derived from the three Sections clearly indicate that effective meetings of water works men can be held under present restricted conditions. The Four States and Minnesota Sections are planning to carry out the same idea. More power to them!

Joseph L. Quinn, Acting Director of the Div. of Environmental Sanitation, Indiana State Board of Health, has devised a special service award with which the board is annually honoring all employees of water

(*Continued on page 2*)

(*Continued from page 1*)

works in the state who have served their organizations for 25 years. The award is known as the John N. Hurty Service Award, in honor of the founder of the Indiana Section of the A.W.W.A., and an illustrious crusader and apostle of public health in the Hoosier State. There is a scroll citation, signed by the governor of the state and the director of the board of health, and, when governmental restrictions are lifted, there will be a silver lapel button.

Quinn's main objective when he conceived this award was to attract public attention to these faithful servants whose work is often neither understood nor appreciated by the lay public. The awards for 1945 were presented in person at the Indiana Section's District Meetings in June, and an effort was made to have write-ups and pictures in all of the local papers, thus providing an opportunity to publicize histories of the water works and of the individuals, and to describe the present operations of water works plants.

First recipients of the award devised by Quinn included all those water works men in Indiana who have been engaged in their work for 25 years or more. Among them were four men who have been in it for 50 years or more, the oldest of these being B. Youree of the Indianapolis Water Co., who began swinging a shovel for that company in 1890 and is still doing so. At Richmond, Ind., three recipients were the Chief Engr., William Armbruster, who entered the city's employ in 1913, and his two brothers, Andrew Armbruster, Asst. Engr., who began in 1917, and Carl Armbruster, Engr., who started in 1919. Two men fell in the 45–49-year group, ten in the 40–44-year group, 27 in the 35–39-year group, 36 in the 30–34-year group and 66 in the 25–29-year group.

(*Continued on page 4*)

A.W.W.A. Standard Specifications for Sulfate of Alumina

The Emergency Alternate Specifications for Sulfate of Alumina, adopted by the A.W.W.A. Board of Directors, June 25, 1942, and published on page 1073 of the July 1942 JOURNAL, are no longer effective. The A.W.W.A. Standard Specifications which appeared on page 731 of the 1936 edition of the *Water Works Practice Manual* are again the official A.W.W.A. specifications. They were reprinted as an appendix to the Emergency Alternate Specifications in the July 1942 JOURNAL.

(*Continued from page 2*)

George Tilley Seabury, Executive Secretary, American Society of Civil Engineers, died in New York on May 25 of coronary thrombosis.

Born in Newport, R.I., 65 years ago, Mr. Seabury was graduated from the Massachusetts Institute of Technology in 1902. After a short period in the heavy engineering construction field, he spent ten years with the New York Board of Water Supply, working on the Ashokan Reservoir and Dam, and later on the Kensico Reservoir and Dam. In 1915 he was appointed division engineer in charge of $18,000,000 worth of construction for the new water supply system in Providence, R.I.

During World War I, Mr. Seabury served as a major in the Army Quartermaster Corps, doing construction work at camp sites in this country. In the early twenties he was engaged in private practice in New England, and, on Jan. 1, 1925, took office as Secretary of the A.S.C.E. Since that time, membership in the society has almost doubled. Mr. Seabury founded the journal *Civil Engineering* for the society in 1930.

Milford E. Rogers, former Engr. and Supt., Wichita, Kan., Water System, is now Project Engr. with Builders-Providence, Inc., Div. of Builders Iron Fdry., Providence, R.I.

Rogers will be engaged in sales and service in connection with design and manufacture of flowmeter, flow control and related equipment for water and sewage works. A native of St. Louis, Mo., Rogers received a B.S. in Civ. Engr. from Kansas Univ. Before entering the water works field in 1937, he was engaged in design, maintenance and construction for the Santa Fe Railway.

(*Continued on page 6*)

(*Continued from page 4*)

Homer G. Turner, Research Engineer at State College, Pa., for the Anthracite Equipment Corp. of New York, died of a heart attack on May 17 in Erie, while there on a business trip.

Mr. Turner was born in Toronto in 1887 and educated at Syracuse and Chicago universities. Before becoming Director of Research for the Anthracite Equipment Corp. in 1930, he had taught geology and mineralogy, first at Syracuse and then at Lehigh University. In 1927, he commenced his work in the anthracite research field and developed its potentialities as a filter medium. Thereafter he became affiliated with the Anthracite Equipment Corp. and engaged in a continuing study of "Anthrafilt." He published a number of technical treatises on anthracite, its geology, physical properties, chemical properties and non-fuel uses. An article by him dealing with "Anthrafilt" appeared in the April 1944 JOURNAL.

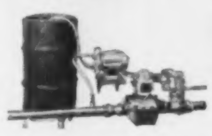
(*Continued on page 8*)

DON'T LEAD A HORSE TO WATER HE WON'T DRINK

Your customers, too, have good horse sense about pure drinking water. They want water that is safe — properly chlorinated — and they won't tolerate dangerous undertreatment or the disagreeable taste resulting from wasteful overtreatment.

Over 17,000 installations of %Proportioneers% are providing dependable and precise chemical feeding in many parts of the world. %Proportioneers% equipment automatically injects just the right amount of treating chemical at just the right time. Models are available for constant rate, flow-responsive or time-responsive operation. We can solve your water treating problem.

Let us know your requirements.



Automatic and Proportional Chem-O-Feeder

. . . Utilizes water power from the main to inject reagents into the line; paced by meter, it starts, varies and stops dosage in step with water flow rate.

% PROPORTIONEERS, INC. %

61 CODDING ST., PROVIDENCE 1, R. I.

(*Continued from page 6*)

Bernard J. Lechner, Office Manager of the Erie, Pa., Water Department, died on May 15 after a short illness. He was 67 years old.

Born in St. Marys, Pa., Mr. Lechner was educated in Erie and in his youth was a public accountant there. In 1918 he was appointed chief accountant of the water department, which he served constantly since then. In 1931 he was made secretary and treasurer and in 1937 became office manager.

An Active Member of the A.W.W.A., Mr. Lechner had served as Secretary-Treasurer of the Central States Section for four years and was subsequently vice-chairman and chairman of that group, which was later reorganized as the Western Pennsylvania Section.

John M. Rice, Cons. Engr., Pittsburgh, has been appointed to the Board of Registration of Professional Engineers in Pennsylvania. Rice has been a member of the Association since 1921.

(*Continued on page 10*)

(*Continued from page 12*)

Alvin C. Southard, Manager of the Water Department of the Incorporated Village of Freeport, Long Island, N.Y., died suddenly of a heart attack on May 28, at the age of 63. He was working in the pumping station when he collapsed.

A native of Freeport, Mr. Southard had first joined the water department as Foreman of Water and Sewer maintenance in 1929 and was made Superintendent in 1931. The department was greatly enlarged and expanded under his leadership.

Capt. Armon Lund, C.E., former Chemist and Asst. Supt., Evanston, Ill., Water Dept., is now supervising operation and maintenance of all water supply and sewage treatment facilities at all army posts in North and South Carolina. He is attached to the Raleigh, N.C., field office of the Fourth Service Command Hq. Captain Lund is an alumnus of Northwestern Univ.

(*Continued on page 16*)

(*Continued from page 16*)

Major D. R. Taylor, C.E., Supt., Roanoke, Va., Water Dept. since 1922, now on military leave-of-absence, has been put in charge of the Water and Sewage Sec. of the Fourth Service Command Hq., Atlanta, Ga. He is supervising the operation of all Army water supply and sewage disposal in the seven southeastern states. Major Taylor, a graduate of Virginia Polytechnic Institute, won the Fuller Award in his section in 1942.

Frank Tetzlaff, P.A. San. Engr., U.S.P.H.S., is now attached to the Dist. No. 2 Office, Richmond, Va. Tetzlaff has been Civ. Engr. with the Long Island, N.Y., State Park Com.; San. Engr. with the Ministry of Health, Venezuela; and San. Engr. in the Nassau County, N.Y., Health Dept.

John C. Luthin, San. Engr., has been transferred by the U.S.P. H.S. from the Arizona State Health Dept., where he was acting in the OCD Facility Security Unit, to the Seventh Dist. Office of the U.S.P.H.S. in Kansas City, Mo. Luthin was formerly with the East Bay Municipal Utility Dist., Oakland, Calif., and with the Hydraulic Div. of the California Railroad Com.

(*Continued on page 20*)

Cancellation of WPB Restrictions Affecting A.W.W.A. Specifications

The cancellations of the following War Production Board restrictive orders affect the specifications indicated. All members having these documents in their possession should remove from them the limitation orders, printed on blue paper as a separate wrap-around, except in the case of Specifications 7F.3–1940, in which the restrictions information should be marked "Canceled."

Order	*Canceled*	*Affecting Specifications*
L–39	May 17, 1945	7F.3–1940
L–154, Schedule 1	Apr. 27, 1945	7M.1–T
L–211	Apr. 28, 1945	7A.3–1940 & 7A.4–1941—TR
L–252	Apr. 28, 1945	7F.1–1939

(Continued from page 18)

Mass prevention of man's most common disease, tooth decay, merely by drinking fluorinated water was predicted by dental leaders at a recent meeting of the New York Institue of Clinical Oral Pathology. Dr. William J. Gies, Past Pres. of the American College of Dentists, Dr. Arthur Merritt, Past Pres. of the American Dental Assn., and Dr. David B. Ast, Dental Director of the New York State Dept. of Health, forecast this utopia as a result of experiments being conducted by the State Dept. of Health at Newburgh and Kingston, N. Y.

Toasting the success of the research project at Newburgh with fluorinated water especially sent down for the occasion, Dr. Gies said that "by the addition of physiological proportions of sodium fluoride to communal water supplies" tooth decay can be controlled without inducing toxic effects elsewhere in the body.

"It has been discovered," said Dr. Gies, "that fluorine has cut down the incidence of dental cavities in those sections of the country where it is found in the drinking water."

"In June 1944," said Dr. Ast, who reported on fluorination in the September 1943 JOURNAL, "systematic fluorination tests were begun at Newburgh and Kingston. The research project will continue for a

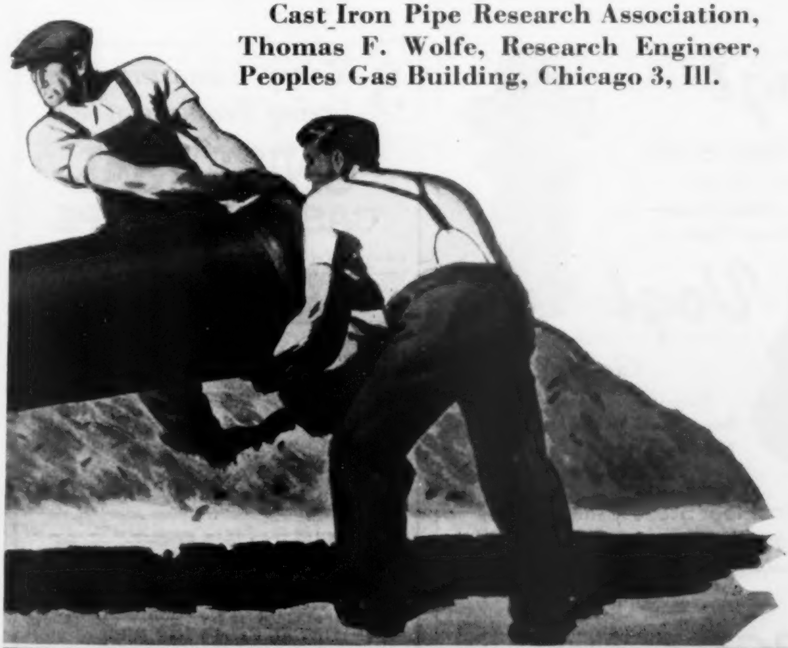
(Continued on page 24)

Among products that have been proved by many years of experience, cast iron pipe is in the highest rank. Consider its truly remarkable record.

Cast iron water mains were pioneered in America 120 years ago. Today, in 200 out of 212 of our largest cities, some or all of the original cast iron mains are still in service, in many instances after more than a century. In the 15 largest cities, more than 95% of the pipe in the water distribution systems is cast iron pipe. In the three largest cities—New York, Chicago, Philadelphia—the ratios are, respectively, 97%, 99% and 98%. Thus it is evident that topflight engineers *continue* to endorse the judgment of four generations of water works men.

Confidence, based on experience, is doubly important in the case of pipe to be installed underground for distribution mains. They represent the major investment in a water supply system. So we say—*trust the pipe you know about.*

Cast Iron Pipe Research Association,
Thomas F. Wolfe, Research Engineer,
Peoples Gas Building, Chicago 3, Ill.



SERVES FOR CENTURIES *Tax Saver No. 1*

(*Continued from page 20*)

period of from ten to twelve years at a yearly cost of approximately $25,000. These two cities, each with a population of about 30,000 and possessing comparable water supplies, population groups, climatic conditions, economic status, and common sources of food supply, have agreed to serve as demonstration and control areas.

"Newburgh, as the study area, will have its potable water supply treated with sodium fluoride. Kingston, where the water supply is fluorine-free, will continue to use its natural water supply and will serve as a control.

"All five- to twelve-year-old children in the schools of Newburgh and Kingston will be examined annually for dental-caries experience. To date available data indicate that the benefits derived from ingested-fluorine water accrue during the years of tooth development, that is, through age eight. After the teeth have calcified, fluorine drunk in water is apparently not effective. Adult examinations will determine the effects of fluorine in small concentrations on persons past 50 years.

"There is every reason to believe," Dr. Ast concluded, "that artificially fluorinated water will produce the same results in kind and degree that are caused by waters in which fluorine is found naturally."

(*Continued on page 42*)

Changes in Membership

NEW MEMBERS

Applications received May 1 to 31, 1945

★ *denotes military service*

Bath Elec., Gas & Water System, Frank Nollett, Supt. of Utilities, Bath, N.Y. (Corp. M. July '45)

Berry, N. E., *see* Servel, Inc.

Botset, J. W., City Engr. & Water Supt., 200 S. Michigan St., Plymouth, Ind. (Apr. '45)

Cobb, Raymond H., Lake Foreman, 465 Edgemere Drive, Rochester 12, N.Y. (Apr. '45)

Cox, G. Luther, Pres. & Operator, Barnegat Water Co., Barnegat, N.J. (Apr. '45)

Cromwell, Samuel, Water Supt., Water Dept., Municipal Bldg., 8th & Washington Sts., Vancouver, Wash. (May '45)

Deutsch, Fred W., Asst. Sales Mgr., Builders-Providence, Inc., 892 Broadway, E. Providence, R.I. (Apr. '45)

Erwin, R. Blake, Cons. Engr., Box 71, 600 Erie Ave., Niagara Falls, Ont., Can. (July '45)

Foley, Ray A., *see* Gifford-Hill Pipe Co.

Gibeau, H. A., Director of Public Works, City Hall, Montreal 1, Que., Can. (Apr. '45)

Gifford-Hill Pipe Co., Ray A. Foley, Vice-Pres., 412 Texas Bank Bldg., Dallas, Tex. (Assoc. M. Apr. '45)

Henderson, Edwin M., *see* South Boston Water Dept.

(*Continued on page 30*)

(*Continued from page 30*)

Pulaski, Town of, Howard C. Jackson, Supt., Water Dept., Box 150, Pulaski, Va. (Corp. M. Apr. '45)

Purcell, Donald M., Mgr., Water Dept., 16 S. Second St., Pottsville, Pa. (Apr. '45)

Renalds, R. L., *see* Luray, Town of

Roberts, Franklin W., Commercial Director, Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Apr. '45)

Scherich, Lloyd J., Mgr., Light & Water Dept., Superior, Neb. (Apr. '45)

Servel, Inc., N. E. Berry, Engineering Library, Evansville, Ind. (Corp. M. Apr. '45)

Simmonds, I. G., Asst. Chem. Engr., Dept. of Health, San. Eng. Div., 807 Richmond St., W., Toronto, Ont., Can. (July '45)

Sneath, Roy G., Civ. & Munic. Engr., Meadows, Critoph & Misener, 62 Richmond St., W., Toronto, Ont., Can. (July '45)

South Boston Water Dept., Edwin M. Henderson, Supt. of Filter Plant, South Boston, Va. (Corp. M. Apr. '45)

Walker, James G., Mgr., New York Dist., Transite Pipe Dept., Johns-Manville Sales Corp., 22 E. 40th St., New York 16, N.Y. (Apr. '45)

Welker, Leland A., Supt., Penn Yan Munic. Board, 2 Maiden Lane, Penn Yan, N.Y. (Apr. '45)

REINSTATEMENTS

Darby, W. A., Mgr., Eastern Territory, San. Eng. Div., The Dorr Co., 91 Cray Terrace, Fanwood, N.J. (June '27)

Perkins, Francis D., New York Repr., R. D. Wood Co., 1237 James St., Syracuse, N.Y. (July '41)

Willson, Richard C., Supt., Water Dept., City Hall, Hagerstown, Md. (Oct. '41)

LOSSES

Deaths

Howe, Henry L., 34 Court St., Rochester 4, N.Y. (Apr. '38)

Lechner, Bernard J., Office Mgr., Bureau of Water, 701 French St., Erie, Pa. (July '29) *A*

(*Continued on page 34*)

(*Continued from page 32*)

Murchison, H. A., Dist. Mgr., The Permutit Co., 131 E. Bay St., Jacksonville 2, Fla. (Apr. '37)

Seabury, George T., Secy., American Soc. of Civ. Engrs., 33 W. 39th St., New York 18, N.Y. (June '30)

Southard, Alvin C., Mgr., Water Dept., Inc. Village of Freeport, 46 N. Ocean Ave., Freeport, N.Y. (July '40) *M*

Turner, Homer G., Research Engr., State College, Pa. (Sept. '32) *P*

Resignations

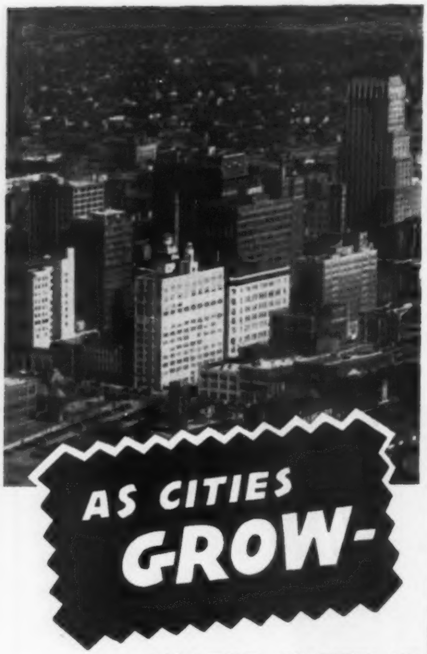
Armstrong, E. M., Supt., Water Dept., 712 Washington St., Vancouver, Wash. (Apr. '43) *A*

Gebhart, Earl, Supt., Middletown Water Works, 116 Baltimore St., Middletown 21, Ohio (Apr. '39) *M*

Shepherd, Ralph, Assoc. Civ. Engr., Bureau of Water Supply, 4636 Rokeby Rd., Baltimore 29, Md. (July '42) *M*

White, Homer C., Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Oct. '37) *A*

(*Continued on page 36*)



(*Continued from page 34*)

Changes in Address

Changes of address between May 15 and June 15, 1945

Baker, Harold W., Comdr., U.S.N.R., Bureau of Yards & Docks, 3011 S. 7th St., Arlington, Va. (Jan. '43)★

Baranousky, Elizabeth (Miss), 501 Raritan Ave., Highland Park, N.J. (Jan. '41)

Carrillo, Oswaldo Ruiz, Civ. Engr., Sur 17 Bis No. 1, Caracas, Venezuela, S.A. (Jan. '44)

Davis, Don C., Civ. Engr., 921—13th St., Modesto, Calif. (Jan. '41) *M*

Doane, H. W. L., Mgr., Public Service Com., 311 Roy Bldg., Halifax, N.S., Can. (Oct. '44)

Earp, Fred B., Mecklenburg Construction Co., Trust Bldg., Durham, N.C. (Jan. '41)

Edwards, G. H., Civ. Engr., 822 E. Carson, Long Beach 7, Calif. (July '44)

Frazier, Irvin, Salesman, Hays Mfg. Co., 1255 Edwards Ave., Lakewood, Ohio (July '44) *M*

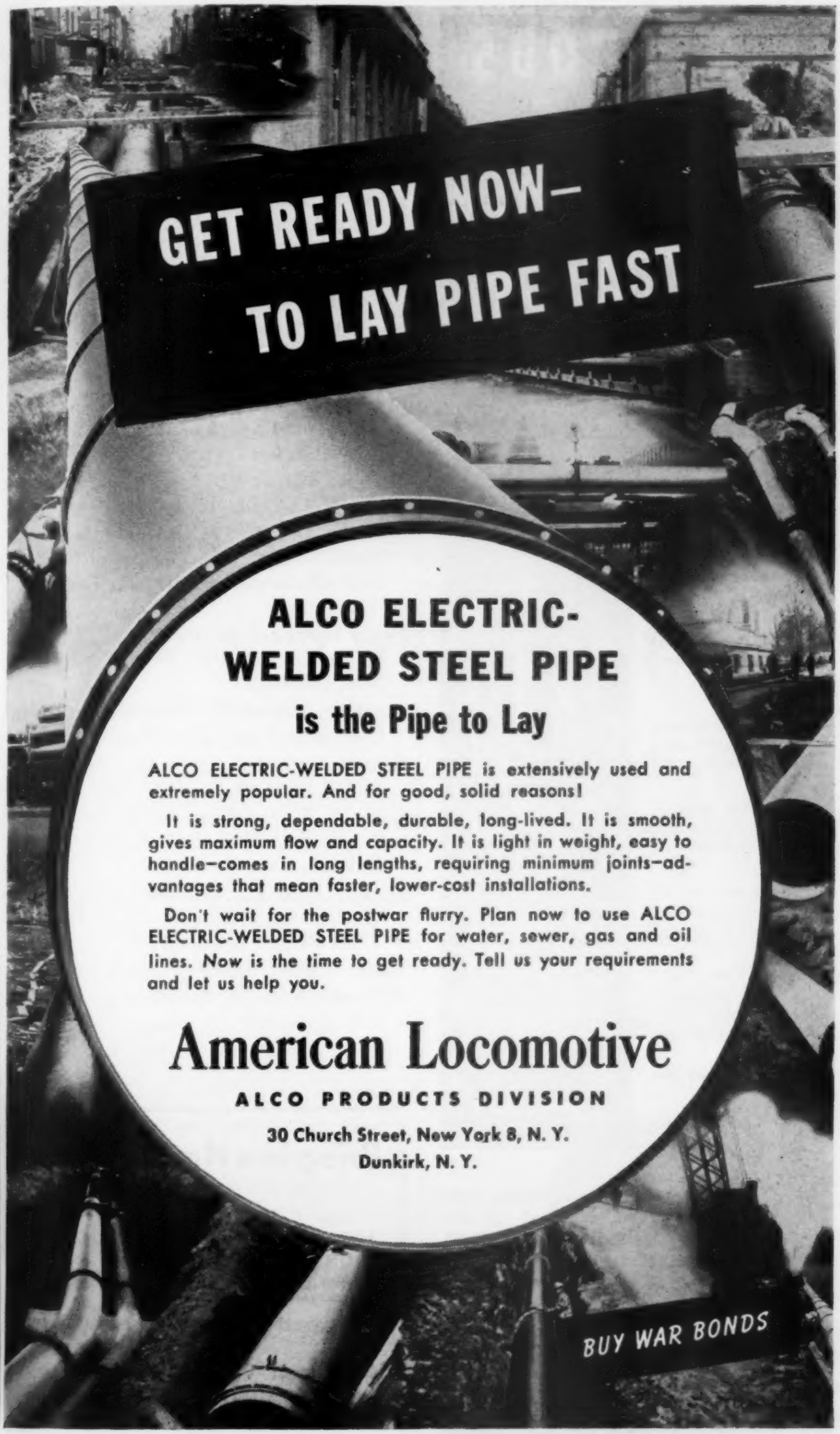
Graves, Quintin B., c/o State Board of Health, Pierre, S.D. (Apr. '39) *P*

Guillermety, Luis M., Jr., Wilson St., No. 24, Santurce, P.R. (Jan. '45)

Hamelin, Douglas F., Geologist, Western Water Wells, Morris Bldg., 3rd Ave., S., Lethbridge, Alta., Can. (Jan. '45)

Henriques, José Franco, Head of Bureau of Water Supply, Federal Service of Water & Sewage, Rua Irineu Marinho, 70 Urca, Rio de Janeiro, Brazil, S.A. (Jan. '44)

(*Continued on page 38*)


GET READY NOW—
TO LAY PIPE FAST
ALCO ELECTRIC-
WELDED STEEL PIPE
is the Pipe to Lay
ALCO ELECTRIC-WELDED STEEL PIPE is extensively used and extremely popular. And for good, solid reasons!
It is strong, dependable, durable, long-lived. It is smooth, gives maximum flow and capacity. It is light in weight, easy to handle—comes in long lengths, requiring minimum joints—advantages that mean faster, lower-cost installations.
Don't wait for the postwar flurry. Plan now to use ALCO ELECTRIC-WELDED STEEL PIPE for water, sewer, gas and oil lines. Now is the time to get ready. Tell us your requirements and let us help you.
American Locomotive
ALCO PRODUCTS DIVISION
30 Church Street, New York 8, N. Y.
Dunkirk, N. Y.
BUY WAR BONDS

(*Continued from page 36*)

Kimball, Jack H., P.A. San. Engr. (R), 4803 E. 75th St., Seattle 5, Wash. (Apr. '44)

Kroschwitz, Fred, Salesman, Mueller Co., 610 Bayview Ave., Seaside Heights, N.J. (July '40)

Levy, A. Zabdiel, 4215 Liberty Heights Ave., Baltimore 7, Md. (Jan. '40) *M*

Luthin, John C., U.S. Public Health Service, 603 B.M.A. Bldg., 215 Pershing Rd., Kansas City, Mo. (Jan. '40) *P*

Merrick, Clyde R., Water Supply Engr., R.R. 1, Box 86-D, Indianapolis 44, Ind. (Jan. '37)

Miles, Henry J., Assoc. Prof. of Civ. Eng., College of Eng., 957 W. 30th St., Los Angeles 7, Calif. (July '41) *P*

Moggio, William A., Moore Apts., Burlington, N. C. (Jan. '40) ★

Parrish, Dorothy M. (Mrs.), Scientific Aide-Chemist, U.S. Geological Survey, 2408 Rio Grande, Austin 21, Tex. (Oct. '44)

Peck, Lawrence J., Dist. Mgr., Wallace & Tiernan Co., Inc., Box 375, Valatie, N.Y. (May '27) *P*

Ratcliffe, Robert C., 3519 Hynds Blvd., Cheyenne, Wyo. (Jan. '37) *MP*

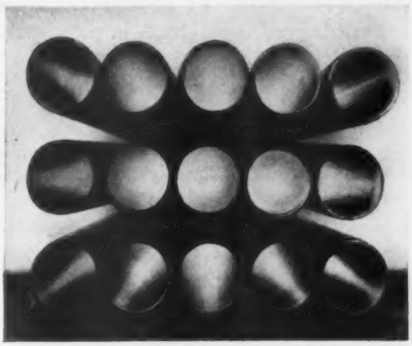
Schaut, George G., 1308 W. Ontario St., Philadelphia 40, Pa. (Oct. '22) *P*

Sohle, F. V., Southwest Sales Mgr., R. D. Wood Co., 315 Construction Bldg., Dallas 1, Tex. (Oct. '42)

Synan, John F., The Mathieson Alkali Works, Inc., 613 Rhode Island Hospital Trust Bldg., Providence, R.I. (Jan. '45)

Uslar, Carlos Suhr, Avenida del Club Paraiso, Villa Elena, Caracas, Venezuela, S.A. (Jan. '44)

(*Continued on page 40*)



EUROPEAN LIBRARIES DEPLETED

Back Numbers Needed to Complete Journal Volumes for War Years

There is now a large demand for complete volumes of the JOURNAL, for the years 1939–1944, not only to replace literature destroyed by the war, but also to supply scientific information that has been unobtainable for six years. However, the issues listed below are in short supply, and the Association appeals to you to sell back to the headquarters office these numbers of the JOURNAL which are needed to make up complete volumes for overseas libraries. You will be paid \$.50 per copy for doing your part. Send the following JOURNALS immediately to the American Water Works Association, Inc., 500 Fifth Ave., New York 18, N. Y., and they will be acknowledged by a check in payment.

Vol. 31, No. 1	Vol. 33, No. 1
2	2
3	7
4	9
5	12
6	
8	Vol. 34, No. 1
Vol. 32, No. 1	Vol. 35, No. 1
2	
3	Vol. 36, No. 3

Complete Volumes

The Association will also be glad to hear from any member who has complete volumes of the JOURNAL of any year. His willingness to sell will be recorded and when a prospective purchaser applies to the Association for complete volumes, he will be put in touch with the member who has volumes to sell. Shipment may then be made directly to the purchaser. The Association's headquarters office does not have room to store complete volumes, thus making this method of transaction necessary.

(*Continued from page 38*)

Welch, Donald L., State Water Survey, Univ. of Illinois, Urbana, Ill. (Apr. '43) *P*

Whaley, W. J., R.F.D. 3, Greenville, S.C. (Apr. '44) *P*

Williams, Fred F., Box 344, Chanute, Kan. (Jan. '40)

Williamson, James E., Dist. Mgr., Rensselaer Valve Co., 50 Church St., New York 7, N.Y. (July '43)

Wright, Kenneth K., Lawyer, 1131 A. G. Bartlett Bldg., Los Angeles 14, Calif. (Oct. '44)

MEMBERS ENTERING MILITARY SERVICE

Carollo, John A., Constr. Engr., Headman, Ferguson, Carollo & Classen, 325 Ellis Bldg., Phoenix, Ariz. (Jan. '39)★

Mason, Warren L., Lab. Asst., Water Dept., Allison Div., General Motors Corp., 817 Kappes, Indianapolis 3, Ind. (Affil. Jan. '45)★

(*Continued from page 24*)

NEW YORK SECTION REGIONAL MEETINGS

In accordance with the directive issued by the A.W.W.A. Board of Directors after their meeting in January, the New York Section replaced its Spring Section Meeting with several "regional" meetings which made minimum demands on transportation and hotel facilities. The meetings, which were held within the space of four days, repeated the same program each morning and localized topics were discussed in the afternoons. In order to send everyone home at nightfall, instead of keeping them in the cities overnight, the meetings were terminated by 5:00 o'clock.

The uniform morning schedule included: "The Mutual Aid Program," by Earl Devendorf, Asst. Director, Div. of Sanitation, New York State Dept. of Health; "Manpower Savings in Water Works Operation," by Samuel F. Newkirk Jr., Pres., A.W.W.A.; "Water Works Materials From the War Production Viewpoint," by Bayard F. Snow, Dist. Engr., Water Div., OWU, Washington, D.C.; and "Wartime Maintenance Problems," by Hugh S. Dewey, Pres., Western New York Water Co., Buffalo.

Rochester's meeting, held on May 22 at the Hotel Powers, offered afternoon speeches on "Reconditioning a 70-Year-Old Abandoned Water Main," by Lewis B. Smith, Supt., Water Div., Rochester; and a round table discussion led by William H. Clark, Supt., Avon, N.Y., Water Works.

At the Syracuse meeting, held at the Hotel Onondaga on May 23, the conferees heard A. A. Korves, Local Mgr. of the Syracuse Plant, New York Water Service Corp., speak on "Meeting Wartime Demands in Suburban Syracuse." Elon P. Stewart, Engr., Div. of Water Supply, Syracuse, led the round table discussion.

In Albany at the Hotel DeWitt Clinton on May 24, Ernest L. H. Meyer, Supt. of the Glens Falls Board of Water Comrs., spoke on "System Maintenance." The round table was under the guidance of William Luby of Troy.

(*Continued on page 44*)

(*Continued from page 42*)

R. M. Leggette, Cons. Ground Water Geologist, New York City, spoke on "Artificial Recharge of Ground Water" at the White Plains meeting, held in the Westchester County Bldg. on May 25. Tobias Hochlerner, Chief Engr., New York City Dept. of Water Supply, Gas & Electricity, described the distribution of water to outside communities from the New York City supply. James C. Harding, Comr. of the White Plains Public Works, was in charge of the round table discussion.

A total of 400 water works operators attended the four meetings. A large number of these were not A.W.W.A. members, but were individuals engaged in the water works industry and invited to the meetings by the Membership Committee.

Election of officers was postponed until such time as a regular section meeting may be held upon relaxation of the ODT ruling banning conventions which might draw more than 50 persons from outside a local area. The regular luncheon meeting in New York City at the time of the Annual Directors' Meeting in January 1946 has been scheduled, however.

R. K. Blanchard
Secretary-Treasurer

(*Continued on page 46*)

(*Continued from page 44*)

In the pages of "The Way Our People Lived," * W. E. Woodward, the historian, paints America's background by visualizing a few days or a few weeks in the lives of typical Americans in typical years since 1610. In these pages may be found the broken threads of a story of water supply in America. For instance, we read that in Boston, 300 years ago, there might have been a carpenter and cabinetmaker named Doolittle:

One of the products of his shop was called a "cistern." It looked like our modern water cooler, though it had no tap or faucet, and sometimes it was actually used to keep a supply of water, but its ordinary purpose was to hold beer or cider, which were customary household beverages. Water was regarded with deep suspicion, both in England and the colonies, and probably with just reason. Our forefathers knew nothing of sanitation in the modern sense, and the water of wells and springs must have been swarming with germs. Beer and cider were given even to small children with their meals—and between meals whenever they were thirsty. Nevertheless water, as a beverage, was being tried out timidly during the early Puritan period. The Reverend Mr. Higginson, a minister of the time, wrote, "Whereas my stomach could only digest and did

* WOODWARD, W. E. *The Way Our People Lived.* E. P. Dutton & Co., Inc., New York (1944).

(*Continued on page 48*)

(*Continued from page 46*)

require such drink as was both strong and stale, I can and oftimes do drink New England water very well." There was a rumor that Governor Winthrop drank water daily and by preference but the rumor was not generally believed.

Many cisterns came from Doolittle's shop, and some of them were expensive because of the carving on them and their silver hoops. [P. 26.]

In a Puritan community of 1680, we find that the demon Rum had not yet been ferreted out:

There were no bathrooms in the house, but they were not missed, for no one in that era ever took a bath. The fanciful medical lore of the seventeenth century ascribed many human ailments to contact with water. Consequently, washing with water was limited to the hands and face. As was mentioned before, this prejudice extended to the drinking of water, and people in general avoided water as a beverage. On hot summer days even the farm hands, perspiring at their work in the fields, drank cider instead of water. Babies were given beer and cider as soon as they were old enough to toddle. [P. 40.]

New Yorkers in 1750 were apparently not so antipathetic to drinking water as their neighbors to the north, as may be seen in this excerpt from

(*Continued on page 50*)

(*Continued from page 48*)

a description of a house on the corner of William and Wall Streets, occupied by a family named Lawrence.

Water for drinking and washing was brought to the Lawrence house in casks by a contractor who made a monthly charge for this service. Many Manhattan families had wells on their premises, but there was none on the Lawrence place, for when they had gone down 40 ft. the well diggers had struck solid rock instead of water. [P. 106.]

In 1836, Woodward hypothesizes, one Susan Pettigrew might have journeyed from Westchester County, N.Y., to Cincinnati to see her married daughter. En route she stopped in New York City, where she saw "walk-up" apartments.

Water . . . had to be carried up in pails, after being drawn from wells in the street. Owing to the engineering difficulties that arose from its situation on an island New York did not acquire a municipal water system until October 1842, when the Croton water supply came into being. Croton water was brought into the city in large pipes made of hollowed logs, which were supplanted several years later by tubes of iron. [P. 211.]

(*Continued on page 52*)

(*Continued from page 50*)

Susan Pettigrew's next stop, Philadelphia, brought her to a "modern" hotel in which she lodged in a room of her own where she could retire without fear of awaking to find one or more other "females" sharing her bed. Until very recently it had been customary for "hotels" to provide bed-space, not rooms.

The room had running water and a tidy built-in wash basin, but no bathroom. Susan had often heard of houses with pipes of water in them that one could turn on and off, but there were none in New York. Before she went to bed that night she spent a quarter of an hour playing with the faucets and the stream of water just to see how quickly it would start to run and how big a stream came from it. It started slowly and the stream was small. [P. 220.]

In Cincinnati, Susan found her daughter living in luxury.

Upstairs there were five bedrooms and two baths with running water. Caroline turned on the water a moment to show how the bath worked. She said that when warm water was needed it had to be brought upstairs by Julia, but the ordinary cold water was always on tap. The bathtubs were of sheet metal encased in wood. [P. 232.]

Woodward goes on to explain that:

(*Continued on page 56*)

(*Continued from page 52*)

Nobody really knows the history of bathtubs, but tubs made of light metal—probably tin—and shaped like the modern bathroom fixture were in use long before houses were equipped for running water. When pipes were put in dwelling houses it was, no doubt, a simple matter to set up a bathtub with a pipe and a faucet, and tubs of this modern type probably appeared in various localities at approximately the same time. There were many in use in the later 1820's.

The hurricane experience articles in the June JOURNAL bring to mind the following story which Bennett Cerf tells in his *Try and Stop Me:* *

Do you remember the New England hurricane of 1938?

A commuter who lived in Stamford had always wanted to own a barometer. Two days before the big blow he finally bought one at Abercrombie & Fitch. [When] he tacked it up on his wall, [he] read it, and exploded with anger. There was no phone in his house, so he walked a mile to the nearest drugstore and called up Abercrombie. "Fine barometer you sold me," he snorted. "I put it up in my Stamford house and what do you think it registers? *Hurricane!*"

"Return it," soothed the clerk. "We'll replace it with a perfect one."

He went back to fetch the barometer but, by the time he got there, his house had been blown away.

* CERF, BENNETT. *Try and Stop Me.* Simon & Schuster, Inc., New York (1944).

(*Continued on page 58*)

(*Continued from page 56*)

"Cast Iron Pipe News," published by the Cast Iron Pipe Research Association, recently carried the following letter from Col. Ethelred L. Sykes:

"When G.I. Joe goes overseas and reaches the forward areas, he has forcibly impressed on him how great a luxury is a plentiful supply of pure water always on tap. The Army Engineers do a magnificent water supply job, but G.I. Joe 'totes his own.' His wash basin is his steel helmet; his canteen holds his drinking water. He quickly learns to conserve water, and he is forcibly taught the dangers of impure water, which he must avoid or fall prey to dysentery.

"At many Pacific stations, where rainfall is heavy and frequent, you see many tents with a homemade water works consisting of about 8 ft. of gutter pressed against the tent-side, and draining into a large drinking water drum. A few chlorine tablets, or a spot of iodine, makes this rain water quite safe and palatable, even if it does run off a tent side or roof. By elevating the drum, it's frequently possible to tap it off for shower and shaving purposes. The tent I'm living in just now is located on the edge of a 60-ft. cliff, so our drum furnishes us drinking water and a gravity flow line to a lower level of the cliff, where our shower is installed. Far below is the ocean, with a fine swimming place within two minutes walk.

"When the Army is demobilized, millions of boys are going to return home very 'water conscious.' They will be voters who should be supporters of water works and sewage disposal improvements, because they know what it means to do without them."

NEWS OF THE FIELD

This country is now moving from the close controls at the 1942–43 height of the war construction program toward complete relaxation of limitations and the abandonment of WPB allocations of material. Mind you, the word is "moving"! We are not there yet—but the journey has started.

Just as the men in the army always have and always will grouse over the food, so the American people—industry, labor, trade—and water works men, too—have chafed over the restrictions that the military production program has placed upon them. They have longed for the days—which they do not remember too clearly—when the salesman called and did some "selling." They think they remember that the things ordered were always waiting just around the corner. It is just as well for us to get our mental feet on the ground in respect to that matter. We did have to do some waiting for many things, notably large specially-built equipment, before the war. We are going to do some waiting when the controls are taken off.

The WPB has announced that it expects to discontinue priorities assistance for virtually everything except military requirements by the end of 1945. It proposes to assure itself that war-supporting and essential civilian production needs no help before it is turned loose. This is not so simple as it sounds. Just as it was difficult for us—both manufacturers and consumers in the water works field—to adjust ourselves to the restrictions of P-46 (now U-1) and the various limitation orders, so we are going to find it difficult to produce or to get equipment and materials as the control of supplies is taken away and the competition for materials gets going.

Today Order U-1 is only a skeleton of its former self so far as limitations go. In simple number terms, the great majority of water works can use the AA-1 or AA-3 rating under the terms of U-1 to replace all the equipment and to build all the plant that they conceivably need today. Only buildings costing over $25,000 are under control.

But we forget that the rating system that we have had, either under U-1 or on approved 2,774 orders, did confer a *priority*. The water works industry and other essential activities stood well up in the line when it was time to get materials.

(*Continued on page 2*)

(*Continued from page 1*)

When the WPB terminates priorities assistance (and it has been assistance) water works operators will take their place at the counter beside the clamoring manufacturers and users of "consumer goods," such as washing machines, refrigerators, etc. We are not going to like the return to a so-called free market, even though we have groused because it has not been free during the war.

All this means that water works managers must work with their manufacturers understandingly. Manufacturers must be patient with water works managers. Orders must be placed on a considered schedule basis. Every plant that piles up inventory in its stock room will keep its neighbor from getting an equitable share of 1945 or 1946 goods. The manufacturer's agent who grabs a *big* order from one water works, kids himself and hurts his other customers.

The inflationary boom that threatens us will grow on a foundation of greedy producers and gluttonous buyers. The safest way to avoid inflation is to keep our buying and selling balance. WPB restrictions and allocations have imposed that balance upon us. Have we fortitude enough to work and produce without these restrictions?

(*Continued on page 4*)

(*Continued from page 2*)

Maurice N. Gerardy, Senior Associate Civil Engineer of Hydraulics, in charge of hydraulic and water waste surveys for the Department of Water Supply, Detroit, Mich., died after a six-months' illness on June 12.

Born near Detroit in 1896, Mr. Gerardy began his engineering career as Instrumentman with the Detroit United Railways, and a few years later became Party Chief for P. M. Lau, Consulting Engineer in Pontiac, Mich. During the First World War he served in France with a volunteer engineers unit, and then returned to the job of Chief of Party for Mason L. Brown, Consulting Engineer, Detroit, which he had held at the time of his enlistment.

In 1920, Mr. Gerardy became a Pitometer engineer for the Pitometer Co. of New York City, which at that time was carrying on a water waste survey in Detroit. He transferred to the Detroit Department of Water Supply in 1922 and, as an engineer of hydraulics, had a major part in planning the growth of the distribution system from 1,647 miles to 5,042 miles of water mains. During this period the assets of the department increased from $64,500,000 in 1922 to $152,209,000 in 1945.

He was an original Trustee of the City of Detroit Retirement System, appointed in 1937, six months prior to its effective date for organization purposes, and continued to serve as Trustee after the system was in operation.

A member of the A.W.W.A. since 1922, Mr. Gerardy was active in the organization of the Michigan Section, of which he was the first Secretary-Treasurer, and which office he held until the time of his death.

Wallace T. Miller, Supt., Ossining, N.Y., Board of Water Comrs., and formerly chairman of the New York Section, A.W.W.A., has been in service as Lieutenant, CEC, USNR, and in July was ordered to duty in the Pacific Theatre.

Allan H. Rogers, City Engr. and Supt. of Public Works, Garden City, N.Y., and Chairman of the New York Section, A.W.W.A., has taken a six-month leave-of-absence to serve as a consultant to the Office of Chief of Engineers, Army Engineer Corps. He is attached to the First Service Command, and is working on a program for the reorganization of refuse collection.

(*Continued on page 6*)

(*Continued from page 4*)

The Nicholas S. Hill Cup has been awarded for the year 1944–45 to the Missouri Valley Section. This cup has been awarded annually since 1916 to the Section making the largest gain in membership since the previous convention of the A.W.W.A. It was awarded to the Florida Section at the Milwaukee Convention of 1944. Because there has been no 1945 convention, the A.W.W.A. Executive Committee directed that the award for the year be made on the basis of membership totals as of July 1, 1945.

Since 1941 the award has been based upon the recommendations of a special committee headed by Wendell R. LaDue, now Vice-President of the A.W.W.A. A formula for computing the award was established as follows:

The number of points earned will be based on the net annual increase in the paid-up membership at the time of the convention, said points being the result of the following:

(a) 1 point for each 1 per cent of quota gained, plus
(b) 1 point for each 10 members gained.

This weighing of points, while arbitrary, is believed to be equitable.

As the committee stated at the time, it is assumed that it takes more effort to get a new member in a small Section than in a large Section.

(*Continued on page 8*)

(*Continued from page 6*)

A letter from Lt. Col. Lloyd K. Clark, Sn.C., to Col. W. A. Hardenberg, Director, San. Eng. Div., Surgeon General's Office, appeared in the June *Bulletin of the U.S. Army Medical Dept.* Colonel Clark is working on the Metropolitan Water District in Manila, and had the following tale to tell:

I just wanted to drop you a line to let you know how we're doing here. I'm assigned to the Engineers to assist in rehabilitating a large water and sewer system. Got here on 6 February, have worked all night and day—several times—and have been shot at with everything from 5-inch to sniper fire. I got out to the filter plant the day after it was captured. The taking of the plant and appurtenances took place at 7:00 p.m. It was scheduled to be blown at 7:30—what luck! They took out 1,500 lb. TNT. Shellfire damaged one pump and switch panel. They blew the aqueduct in three places, four main line gate valves, part of a covered reservoir. With all bridges blown in the city, the whole south side is shut off, but we've got an old siphon we're putting back into service—they missed that.

There is much damage to service connections due to widespread fires and shelling. Few large buildings are standing. The water went out of the system entirely on 9 February. We had continuous pressure back in the north side on 24 February. My job is to get the Metropolitan Water District on its feet

(*Continued on page 10*)

(*Continued from page 8*)

and generally supervise filter plant and system in city. Three-hundred forty-five of the former employees have reported and we have set up a temporary office in which I have a desk. They are taking hold in good shape but are handicapped by loss of supplies, equipment and vehicles. I am furnishing those from Army sources. The sewerage system was not greatly damaged. There are three lift stations on the north side all O.K. However, the whole system will run by gravity without pumping (electricity was off for about 22 days and now only restored to pump station on north side, filter plant and a few essential purposes) but of course many of the sewers were surcharged. I am making a survey tomorrow, if the snipers will let us, of four lift stations on the south side. We've had to work with guards and several mornings had to chase the "Nips" out of our gravel pit before getting gravel out.

The filter plant is modern and compares very favorably with ours in all respects. City is about 60 per cent watered and only 40 per cent is sewered. Before 3 February, unaccounted-for water ran about 25 to 30 per cent of total delivered—hardly any maintenance for the last three years. "Nips" took all vehicles and removed all catch basin gratings and now they are full of everything under the sun, including dead Japs.

I've been recuperating from a fall off an aqueduct but am feeling fine now. We are nicely "situated" in the undamaged and completely furnished German embassy until we get kicked out.

(*Continued on page 12*)

(*Continued from page 10*)

The July *Bulletin of the U.S. Army Medical Dept.* published this further news from Colonel Clark:

———I'm now in charge of the city water and sewage system and am chief of the Water Supply Section of Operations Division of Luzon Engineer District. . . . The amount of work to be done on repair of water distributing system is terrific. Even though there aren't many direct hits on the mains, the tremendous amount of shelling on nearby buildings has been enough to make for a generally leaky system. We now have nearly the whole north side in service, but in some places the pressure is weak. We have maintained 40 to 45 lb. downtown for the last two days. We have few sections in service on south side but there must be 80 per cent of the area burned and all of the big buildings demolished by mines and shellfire. Have over 500 former employees back in Metropolitan Water District Office and, except for repair of 72-in. concrete aqueduct, they are making all repairs. Yesterday 97 leaks were repaired. We're handicapped by lack of trucks and repair materials—not a single repair for broken hydrants; so we're having to make them, which is a slow process when they have to be turned out on lathe. Japs left little spare parts for anything. The big office and repair shops of the Metropolitan Water District are completely wrecked. Have fairly good supply of all sizes of pipe—no large size valves.

(*Continued on page 14*)

(*Continued from page 12*)

Filter plant will be operating in about six days. After two years of operating without alum, the filters are very dirty. We've washed the first one five times, and it's still not clean. Also have two engineer water supply companies set up, and they operate distribution points where we can't get city water to the area.

Sewage system O.K. except for burned motors at two lift stations which we can easily replace. Outfall to sea has been reported broken and have man out on that today. It's a 72-in. cast-iron line laid just below bottom. Will look for new diatomaceous filters. . . .

On July 2, Colonel Clark wrote to Association headquarters, adding the following information to his story:

——— I hope time will soon permit me to write up some observations of Manila System. Maj. L. H. Scott [formerly of Oklahoma City, Okla.] has charge of city system now. . . .

[When] Ipo Dam [impounding reservoir] was finally taken . . . [it was found] much to everyone's surprise [that the Nips] hadn't done any damage to dam or gate works. They did blow the aqueduct running to Novaliches Reservoir in one or two places but [the breaks] were repaired in short order and water was released to the reservoir only a few days before its supply would have been exhausted. Reservoir is now filling in good shape and as far as supply is concerned it will be more than adequate from now on. Major Scott tells me consumption is running around 50 mgd. now.

I will be happy to transmit A.W.W.A. greetings to Met. Water District and especially to Mr. Perlas, Supt. of Bolora Filters and Stored Water Supplies. He . . . has told me all about the fine trip he had in the States [in the late thirties]. Perlas had some trying times with the Nips and I'm afraid they added some grey hairs to his head. However, he did a good job—he held out a good supply of alum and liquid chlorine which we used after capturing the plant. He also talked the Nips into permitting him to remove the two W & T chlorinators from the chlorine house and thus saved them from damage or loss. He was able to install them and start them operating in two days despite a few missing parts. He has been very grateful for the help the Yanks have given and he has co-operated in every way. His plant and lab building housed combat troops for several months and his back yard was used for mortar emplacements. . . .

(*Continued on page 16*)

(*Continued from page 14*)

The thirst for scientific literature in European countries, where books both were destroyed and failed of production during the Occupation, is poignantly illustrated in a letter from the office of the Executive Secretary of the General Association of Hygienists and Municipal Technicians, Paris. A complete series of JOURNALS, from July 1940 to date, have been dispatched.

Similar requests are, however, difficult to fill because the supply of some back numbers of the JOURNAL is almost depleted. Any A.W.W.A. member who possesses any of the following issues is urged to sell them to the Association's headquarters office at $.50 a piece, for redistribution to European libraries:

Vol. 31, No. 1	Vol. 33, No. 1
2	2
3	7
4	9
5	12
6	Vol. 34, No. 1
8	Vol. 35, No. 1
Vol. 32, No. 1	Vol. 36, No. 3
2	
3	

ASSOCIATION GÉNÉRALE
DES HYGIENISTES ET TECHNICIENS
MUNICIPAUX
(*Hygiène, Services Techniques, Travaux Publics*)
RECONNUE D'UTILITÉ PUBLIQUE

PERMANENCE
L' APRÈS-MIDI DE 14 H.À 18 H.
(SAUF LE SAMEDI)

Paris, le 14 Novembre 1944

SIÈGE SOCIAL:
13, RUE DE L'ODÉON, PARIS–6e
SECRÉTARIAT GÉNÉRAL

Sir,

The latest number of your interesting review we received was issued in June 1940. Since that day, neither you nor us could keep in being the exchange of your publications. In fact, we had to cease the issueing of the "Technique Sanitaire & Municipale." We could only print a little more than a dozen of Bulletins, of which we are including a sample copy.

We should be very glad to keep up to date our collections so that our members can be aware of that happened in matter of water works in your country.

So, we offer to send to you all the Bulletins we issued and would be very glad to receive this various numbers of the "Journal of the American Water Works Association," that were printed since July 1940.

If you do not agree with this offer, please let us know how much money we shall send to you to receive those numbers.

Yours faithfully
/signed/P. Descroix

(*Continued on page 20*)

(*Continued from page 16*)

This letter was followed by another, reproduced below:

Paris, le May 28th, 1945

Dear Sir:

I was very glad to receive your kind letter of April 13th, which, thank to the air mail, crossed the ocean in one month, instead of five by the ordinary ways of the Post Office.

I am mailing the copies of our Bulletin we issued since 1940, being only sorry that, owing to the War Regulations, we could do no more: in fact, our "Technique Sanitaire et Municipale" was not allowed to appear . . . and is still not, so that, issuing something else in lieu of it, we had to christiannize (sic) it "circular." Happily, we owned some paper in 1940: with the same, we must last as long as possible.

I personally wrote a law thesis, about "Le régime juridique des eaux souterraines en France et à l'éstranger" (The underground water statute in France and abroad) for which I owe very much to MM. David G. Thompson, Albert G. Fiedler, W. G. Irving, and, generally, to your JOURNAL. I also mail one copy of it to your address. . . .

Yours faithfully,

/signed/ P. Descroix
Secrétaire général

(*Continued on page 22*)

(*Continued from page 20*)

H. A. Murchison, Sales Engineer in the Florida Territory for the Permutit Co., died on May 14 in Jacksonville at the age of 59. Mr. Murchison had been associated with the Permutit Co. since 1927. He had been active in the affairs of the Florida Section of the A.W.W.A. for the past eight years.

Malcolm Pirnie, Cons. Engr., New York City, received the honorary degree of Dr. Eng. from Rensselaer Polytechnic Institute, Troy, N.Y., on June 22. A captain in the last war and a consultant to the War Dept. in this one, Pirnie, in his address to the graduating class, urged universal conscription. Pirnie is a Past-Pres. of A.W.W.A. and a Diven medalist. He is currently serving as Chairman of the Com. on Water Works Practice, the governing body of all technical activities of the Association.

Roswell M. Roper, Engr. and Gen. Mgr., Board of Water Comrs., East Orange, N.J., and W. R. Conard, Cons. Engr., Burlington, have been appointed by Gov. Walter E. Edge to the New Jersey Water Policy and Supply Council, successor to the New Jersey Water Policy Com. (see Jour. A.W.W.A., **37**: 457). The legislature's reorganization measure created a new state department of conservation, consolidating a number of existing departments, boards, commissions, etc., under one head, with a commissioner to manage the whole, and without disturbing the working members of any. However, the departments, boards, commissions, etc., were turned into councils to care for each, and the membership of each council was increased to nine, the members serving without compensation.

(*Continued on page 24*)

(*Continued from page 22*)

New representative of the Water and Sewage Works Manufacturers Association on the A.W.W.A. Board of Directors is George B. McComb, Mgr. of Sales to the water works field, the Barrett Div. of Allied Chemical & Dye Corp., New York City. McComb, who has been in this position since 1928, has been employed by Barrett for more than 20 years, and has lived and worked in almost every state in the United States. He was born in Virginia 52 years ago. He is now a resident of Summit, N. J.

© *Bachrach*

McComb succeeds Clinton Inglee of the National Water Main Cleaning Co., New York, whose three-year term has just expired.

William C. Long, former Chlorination and Sewage Disposal Engr. at the DuPont plant in Richland, Wash., is now Engr. in charge of water and sewage treatment and chlorine control at the Indiana Ordnance Works, Louisville, Ky.

(*Continued on page 46*)

Changes in Membership

NEW MEMBERS

Applications received June 1 to 30, 1945
★ *denotes military service*

Blum, Hans A., Acting Mgr., Hercules Powder Co., 415 Rhodes Haverty Bldg., Atlanta, Ga. (Apr. '45)

Bulbin, David S., Water Engr., Public Works Dept., Lagos, Nigeria, British West Africa (July '45)

Caldwell, Charles G., *see* New Mexico Dept. of Public Health

Colvin, Dean E., Capt., San. Engr., Surgeon's Office, USAF, APO 708, c/o Postmaster, San Francisco, Calif. (July '45) ★

Compton, C. C., Supt. of Filtration, International Harvester, Benham, Ky. (July '45)

Dean, Louis, Secy. & Comptroller, Long Island Water Corp., 337 Merrick Rd., Lynbrook, N.Y. (July '45)

Dietz, Irving M., Jr., Hydr. & San. Engr., Naval Air Training Bases, Box 27, Corpus Christi, Tex. (July '45)

Dreyer, John W., Civ. Engr., New York City Dept. of Water Supply, Gas & Elec., 218 Potter Ave., Staten Island 2, N.Y. (July '45)

Estudios y Proyectos, Dept. de, Instituto Nacional de Obras Sanitarias, J. V. Gutierrez, Chief, Ed. Miranda-Esquina Mercaderes, Caracas, Venezuela, S.A. (Corp. M. Jan. '45)

Fields, Bert., Supt., Water Works, Cumberland, Ky. (July '45)

Guenther, Ralph C., Pres., Brining-Guenther, Inc., 207 W. Washington St., South Bend, Ind. (July '45)

Gutierrez, J. V., *see* Estudios y Proyectos, Dept. de

Hale, John S., Cons. Engr., Echols Bldg., Box 961, Staunton, Va. (July '45)

Hayob, Henry, Supt., Water Dept., Munic. Utilities, 110 E. Arrow St., Marshall, Mo. (July '45)

Heyward, Nathaniel J., Capt., Sn.C., 303 Forest Rd., Raleigh, N.C. (July '45) ★

Hines, Harold K., Mgr., Elec. & Water Plant Board, Frankfort, Ky. (July '45)

(*Continued on page 30*)

(*Continued from page 28*)

Hoenk, F. H., Salesman, Electro Rust-Proofing Corp., 606 E. Dayton St., South Bend, Ind. (July '45)

Horacek, Jos., Jr., Tech. Service Repr., Hercules Powder Co., 415 Rhodes Haverty Bldg., Atlanta, Ga. (Apr. '45)

Julian, Roy, *see* Ohio Inspection Bureau

McDonnell, John F., Chief Clerk, Dept. of Public Utilities, 106 City Hall, Cleveland 14, Ohio (Apr. '45)

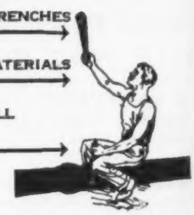
Mizwicki, Sigmund B., Ship Fitter 1st Class, FPO, San Francisco, Calif. (July '45) ★

Moore, Walter J., Sales Mgr., Paterson Boiler & Tank, Inc., 150 Railroad Ave., Paterson, N.J. (July '45)

New Mexico Dept. of Public Health, Charles G. Caldwell, Eng. Div., Box 711, Santa Fe, N.M. (Corp. M. Jan. '45)

Ohio Inspection Bureau, Roy Julian, 431 E. Broad St., Columbus 16, Ohio (Corp. M. July '45)

(*Continued on page 32*)



(*Continued from page 32*)

Senseman, Harold L., Registered Engr., 1030 Calvin, S.E., Grand Rapids 6, Mich. (May '27)

LOSSES

Resignation

Evans, Samuel A., Civ. Engr., 1438 N. Coronado St., Los Angeles 26, Calif. (Oct. '34) *A*

Deaths

Gerardy, Maurice N., Sr. Assoc. Civ. Engr. of Hydraulics, Dept. of Water Supply, Water Board Bldg., Detroit 26, Mich. (Mar. '22)

Grant, W. K., Munic. Engr., Louisiana Fire Prevention Bureau, 609 Canal Bank Bldg., New Orleans 12, La. (May '25)

Hanks, O. P., 105 Parkway Ave., Trenton 8, N.J. (Oct. '35)

Humphreys, Walter, Supt., Waste Water Disposal Co., 633 W. Fern Drive, Fullerton, Calif. (Oct. '41) *M*

Koster, Roy F., 1201 S. Euclid Ave., Pasadena 2, Calif. (Aug. '27) *M*

Changes in Address

Changes of Address between June 15 and July 15, 1945

Abernathy, Gene E., Box 6666, Odessa, Tex. (Jan. '44)

Austin, D. E., Chief Operator, Water Plant, United States Sugar Corp., Clewiston, Fla. (Jan. '45)

Bongiovanni, Jose P., San Engr., Gil 854, Montevideo, Uruguay, S.A. (Oct. '44)

Braidech, Mathew M., Director of Research, Eng. Dept., National Board of Fire Underwriters, 85 John St., New York 7, N.Y. (May '30) *Goodell Prize '36. P*

Buck, Ross Willis, Asst. Engr. (R), U.S. Public Health Service, c/o Williamson County Health Office, 106½ N. 14th St., Herrin, Ill. (Apr. '43) *M*

Carroll, John J., Neptune Meter Co., 102 Blue Ridge Rd., Indianapolis 8, Ind. (Jan. '38) *M*

Christensen, A. Lee, 1572 Orchard Drive, Salt Lake City 7, Utah (Jan. '44) *P*

(*Continued on page 38*)

(Continued from page 34)

Crusoe, Lawrence Evan, Supt., Lakewood Water Dist., 3150 S. 7th St., Tacoma 6, Wash. (Jan. '44) *M*

Edwards, William R., Vice-Pres., New York Water Service Corp., 90 Broad St., New York 4, N.Y. (Apr. '14)

Elsener, L. A., Dist. Mgr., Chicago Bridge & Iron Co., 22 Battery St., San Francisco 11, Calif. (Apr. '44)

Fassnacht, George G., 366 Good Ave., Indianapolis 1, Ind. (Jan. '40) *P*

Fishstein, Max, 53 W. Jackson Blvd., Chicago 4, Ill. (Dec. '27) *M*

Gerstein, H. H., 5484 Everett Ave., Chicago, Ill. (Dec. '25) *P*

Gibson, William C., Capt., Sn.C., 316 Grand St., Coldwater, Mich. (Apr. '44) *P*★

Goldman, Ernst E., Engr., Public Works Dept., Port-au-Prince, Haiti, W.I. (Apr. '44) *P*

Gregory, Robert W., Route 2, Box 137, Greensboro, N.C. (Apr. '39) *P*

Grubb, Elmer K., Mgr., Pottstown Gas & Water Co., 657 W. High St., Stowe, Pa. (Jan. '37) *M*

Hurtado, J. R., San. Chemist, Instituto Nacional de Obras Sanitarias, Dept. de Purificacion de Aguas, Caracas, Venezuela, S.A. (Jan. '39)

Kin, Stephen R., San. Engr., Piedmont Village, 1-B, Camp Butner, N.C. (Oct. '42) *M*

Lauramore, Horace H., Salesman, Johns-Manville Sales Corp., 206 Hambly Bldg., 325 W. Forsyth St., Jacksonville 2, Fla. (Oct. '42)

(Continued on page 42)

(*Continued from page 24*)

H. H. Gerstein has been released from his duties as Major in the San. Corps, after service as San. Officer at Truax Field. He has returned to the Chicago Dept. of Public Works, where he has been appointed Chief Filtration Chemist and placed in charge of the new $24,000,000 South District Filtration Plant, which will be put into operation in the near future.

Quintin B. Graves, Asst. Prof. of Civ. Eng. at the Univ. of Texas, was given a leave-of-absence in June to accept a post as San. Engr. with the South Dakota Board of Health. Graves, who received a B.S. in Civ. Eng. from the Univ. of Kansas in 1930, and an M.S. in San. Eng. from the Univ. of Iowa in 1932, has taught at the Univ. of Tennessee and was an engineer with the TVA in 1935–37. He has been at the Univ. of Texas since then.

Harold Conkling has resigned as Deputy State Engr. of California and has opened an office for practice as Cons. Engr. at 108 West 6th St., Los Angeles. He is specializing in general water supply studies, ground water hydrology, economic reports, etc.

(*Continued on page 48*)

(*Continued from page 46*)

The Western New York Water Co., of which Hugh S. Dewey, A.W.W.A. Director for the New York Section, is President, has received the National Security Award from the Office of Civilian Defense, in recognition of the maintenance of a superior standard of protection and security through the joint efforts of labor and management. The citation stated that "accomplishments to safeguard production, life and property have been outstanding."

Allen A. Lewis, former Water Treatment Service Engr. with the Fuel Economy Eng. Co., St. Paul, is now Research Engr. with Servel, Inc., Evansville, Ind. He is engaged in work on scale and slime prevention on cooling towers.

James H. Judge, Chicago Dist. Mgr. of the Neptune Meter Co. since 1932, has been promoted to the post of Asst. Gen. Sales Mgr. When Judge assumed his new position on July 1, he had completed 22 years in the sales division of the company. Previous to his appointment as Chicago Dist. Mgr. he had had as his sales territory Illinois and part of Missouri.

(*Continued on page 50*)

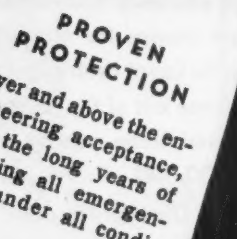
(Continued from page 48)

H. A. Tolburg, Springfield, Ill., has been made Chicago Dist. Mgr. of the Neptune Meter Co. He has been with the company since 1936, as sales representative in the state of Illinois. Previous to joining Neptune, he had sixteen years' experience as city engineer and superintendent at various municipal water works plants.

Builders-Providence, Inc., a division of Builders Iron Fdry., Providence 1, R.I., has available the new 20-page Bulletin 287A, "Measurement, Control and Chemical Treatment of Sewage and Sludge." Appearing in the bulletin are diagrams and descriptions of chemical feeders and new types of indicating, recording and integrating flow instruments for connection to such primary units as Venturi tubes, orifices, Kennison nozzles, Parshall flumes and conveyor scales.

Harry D. Wagner, specialist in industrial instrumentation, has been appointed to the staff of engineers serving the Cleveland area for the Foxboro Co. of Foxboro, Mass., manufacturers of industrial instruments for measurement and control.

(Continued on page 52)



(*Continued from page 50*)

A complete new line of LaMotte Chlorine Control Units has been made available, paralleling the recent advances in the more effective chlorination procedures, involving free chlorine, hypochlorites and chloramines. The latest recommendations of the Committee on Control of Chlorination of the American Water Works Association have been followed, and a new series of standards has been prepared of a size interchangeable with the regular LaMotte pH color standards. Equipment is provided for making the ortho-tolidine-arsenite test, which makes it possible to measure separately chloramine and active chlorine and in which it is possible to estimate the error that is caused by other interfering substances. A pamphlet describing the ortho-tolidine-arsenite test is available from the LaMotte Chemical Products Co., Towson, Baltimore, Md.

Wayne H. Schultz has returned to the staff of Hill, Hubbell & Co., a division of General Paint Corp., Cleveland, Ohio, as Field Engr. and Eastern Representative after a leave-of-absence during the emergency. Schultz specializes in the coating and wrapping-and-lining of steel pipe for water works and sewage purposes, as well as the coating-and-wrapping of steel pipe for oil, gas and other industrial uses.

NEWS OF THE FIELD

Policies of the war agencies which control allocations and prices of materials must be expected to affect the civilian economy unevenly during the transition from war production to peacetime commerce. During June and July the War Production Board issued a series of orders which were intended to place civilian production "on its own" as promptly as possible. The end of the allocation system for civilian agencies was set to become effective Oct. 1, 1945. As this was being done the WPB recognized that competition for materials would produce bottlenecks and that consumer goods industries would be in a position to unbalance the supply situation seriously.

The OPA has not been in accord with this program and the entire situation was placed before President Truman. On August 9 the President wrote J. A. Krug, WPB Chairman, as follows:

> I request you to continue the following program which you have been carrying out:
>
> 1. A vigorous drive to expand production of materials which are in short supply, not only because of military demands, but to meet civilian demands as well.
> 2. Limitation upon the manufacture of products for which materials cannot yet be made available, so as to avoid excessive pressure on supply which would threaten our stabilization program.
> 3. A broad and effective control of inventories so as to avoid speculative hoarding and an unbalanced distribution which would curtail total production and endanger our stabilization program.
> 4. Granting priority assistance to break bottlenecks which may impede the reconversion process.
> 5. Allocation of scarce materials necessary for the production of low-priced items essential to the continued success of the stabilization program.

Since the President's letter was written, the policies of the WPB have been modified accordingly. After August 22 (release No. 8912) no AA preference ratings can be assigned (except as they apply to textiles) for deliveries after September 30. The AA rating system and the Controlled Materials Plan remain effective on deliveries prior to October 1. All AA ratings for deliveries after September 30 are cancelled. The CMP is revoked as of September 30. All allotments of steel, copper and aluminum for the fourth quarter of 1945 are cancelled. This completely frees the market for the three metals from WPB controls after September 30.

(*Continued on page 2*)

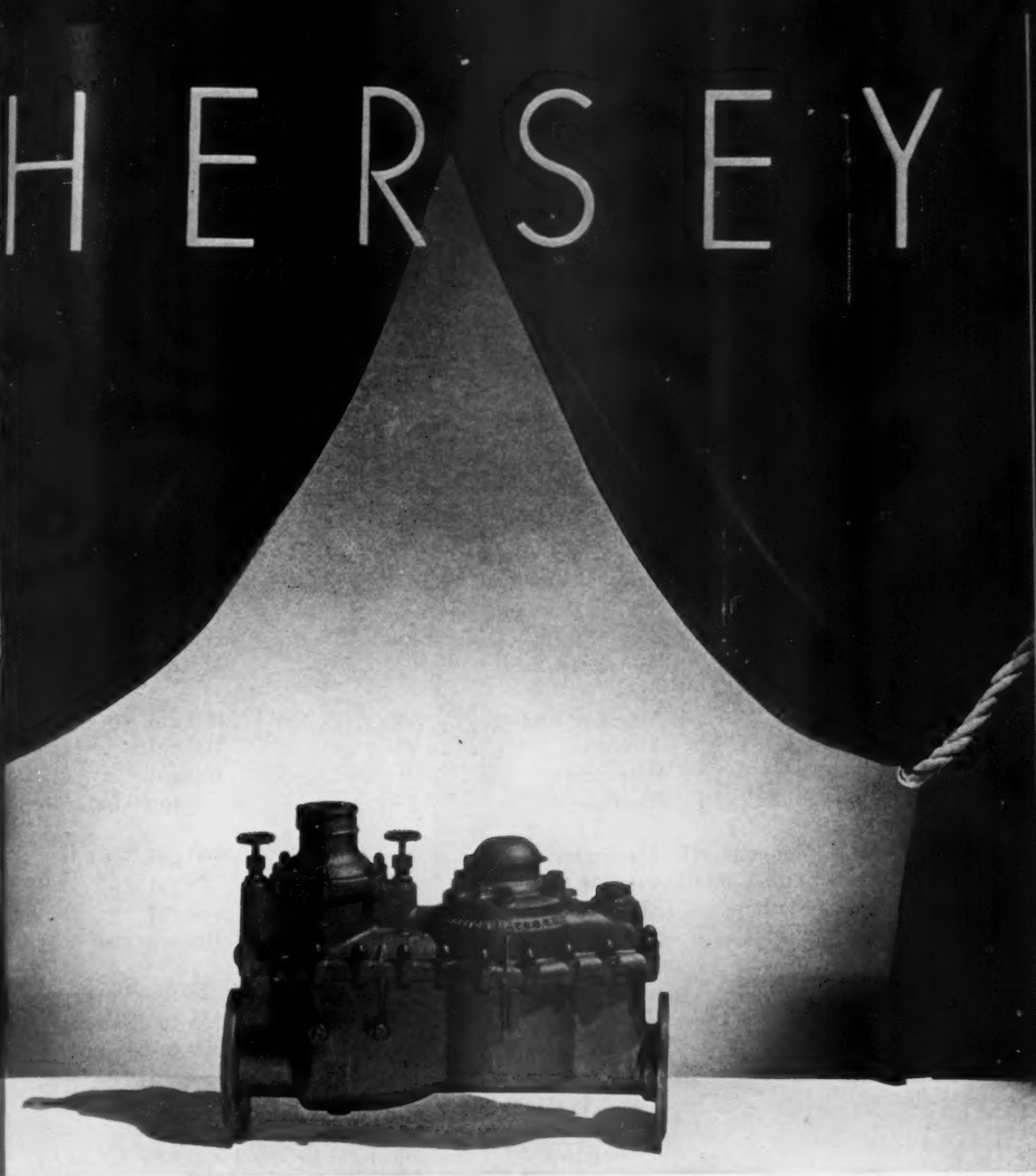
(*Continued from page 1*)

There will be three ratings after September 30: AAA for "top priority," MM for "military" and CC for "civilian." The CC rating will be used sparingly by the WPB and then only to break bottlenecks in reconversion and to insure, when necessary, continued production and services in essential fields and to protect public health and welfare or prevent extraordinary hardships.

This must be understood—it will be practically impossible for the A.W.W.A. office to keep the water works field informed as fully as could be desired, because no one knows what policies will be in effect 30 days from this writing. The best policy for water works men to follow is to use the ratings to which they have been accustomed until no doubt exists in any quarter that ratings are needed.

Carlos S. de Santamaria, San. & Civ. Engr. and recently Mayor of Bogota, Colombia, has been appointed Colombian Ambassador to the United States. Señor de Santamaria has been a member of the Association since 1935, and many of his fellow-members will remember having met him at the Toronto convention in 1941. He is the first member of the A.W. W.A. to become an ambassador.

(*Continued on page 4*)


HERSEY

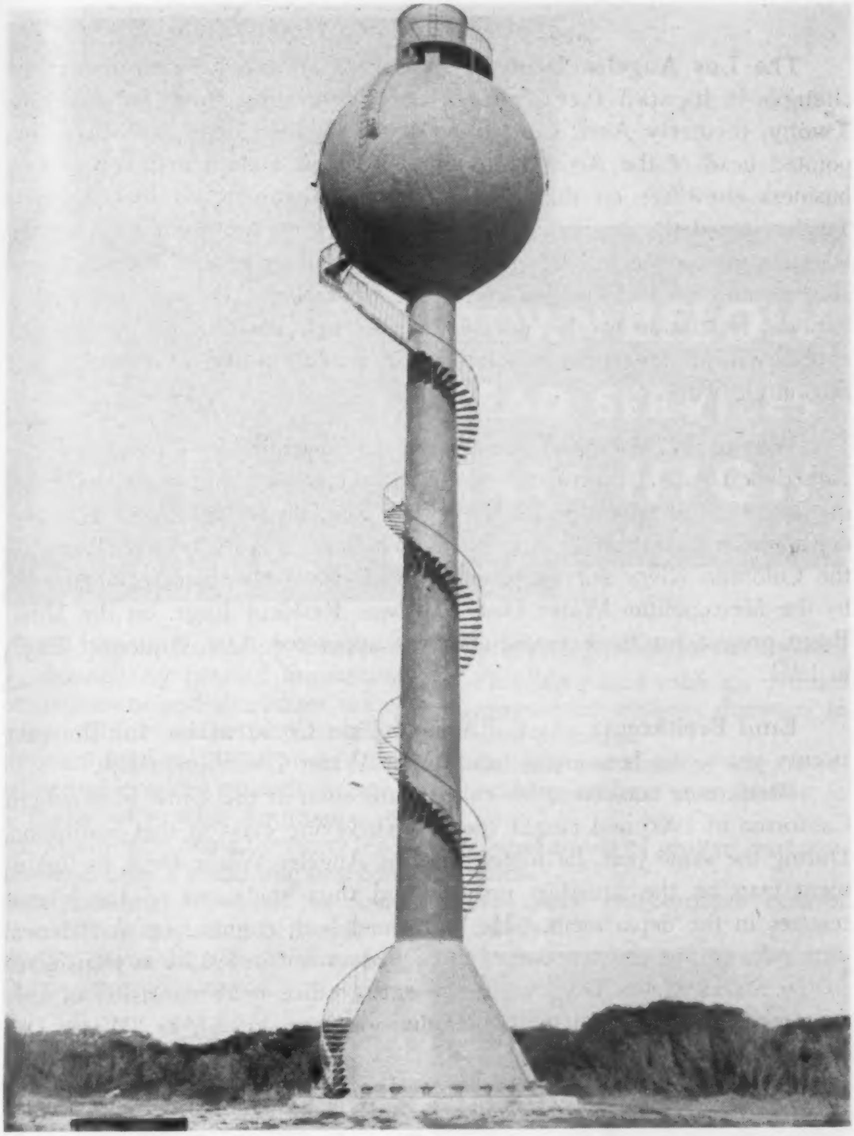
(*Continued from page 2*)

Frequently A.W.W.A. headquarters receives inquiries regarding the amounts of water required by various industries in their production processes. The following tabulation is based on information that has come into the headquarters office from various sources. Its accuracy in detail has not been checked. Any member having authoritative information on the water consumed by any industrial item will confer a favor on the entire water works field by recording his information with the headquarters office.

WATER USE REQUIREMENTS—VARIOUS PRODUCTS

Source of Information	*Product*	*Unit of Product*	*Water Required per Unit*
A. E. Gorman	Ingot Steel	ton	75 tons
	Fabricated Steel	ton	175 tons
Jour. AW.W.A.,	Airplane Engine	unit	125,000 gal. (to test)
35: 846 (1943)	Alcohol	gal.	100 gal.
	Butadiene	lb.	160 gal.
	Gasoline	gal.	7 to 10 gal.
C. V. Youngquist	Aluminum	lb.	960 gal.
Ohio State Eng.	Aviation Gas	gal.	25 gal.
Expt. Station	Electric Power	kw.	80 gal.
Bul. **14**: 21	Explosives	lb.	100 plus gal.
Eskel Nordell	Buildings, office	per capita	27 to 45 gpd.
The Permutit Co.	Hospitals	bed	135 to 350 gpd.
Letter 4/18/44	Hotels	guest room	300 to 525 gpd.
	Laundries		
	(a) Commercial	lb. "work"	4.3 to 5.7 gal.
	(b) Institutional	lb. "work"	3 gal.
	Restaurants	meal	0.5 to 4.0 gal.
	Cotton Bleaching	yd.	25 to 38 gal.
	Cotton Finishing	yd.	10 to 15 gal.
	Dyeing, silk hosiery	lb.	3 to 4 gal.
	Knit Goods, bleaching	lb.	8 gal.
	Woolens, scouring and bleaching	lb.	20 gal.
	Cement Mills	ton	750 gal.
	Pulp and Paper Mills	ton pulp	50,000 to 150,000 gal.
	Refineries, edible oil	gal.	22 gal.
	Soap Factories	ton	500 gal.
	Sugar Refineries	lb.	0.5 gal.
	Sulfuric Acid Plant	ton	5,000 gal.
	Tanneries	lb.	3 to 8 gal.
	Dairies (milk)	qt.	3 gal.

(*Continued on page 6*)



(*Continued from page 4*)

The Los Angeles Dept. of Water & Power has made further changes in its staff (see News of the Field, June JOURNAL). **Frank Twohy,** formerly Asst. Controller of the Water Dept., has been appointed head of the Accounting Div. Born in Duluth and engaged in business elsewhere on the West Coast before coming to Los Angeles, Twohy joined the department as general clerk on the night force of the bookkeeping section in 1925. In 1928 he was made head of the tabulating section, and in 1939 he became Asst. Controller. He has achieved a national reputation for his development of new ideas in the design and application of tabulation machines for public utility commercial and accounting work.

Wayne W. Wyckoff has been made Engr. in Charge of the Aqueduct Div. A native of Ohio, Wyckoff is an alumnus of the Univ. of California, at which he earned a Civ. Eng. degree in 1925. His first engagement with the Los Angeles Water Dept. was as Jr. Civ. Engr. on the Colorado River survey project, which was subsequently taken over by the Metropolitan Water Dist. He was Resident Engr. on the Mono Basin project for three years, and was appointed Asst. Aqueduct Engr. in 1941.

Emil Breitkreutz, Asst. Engr. of Pipe Construction for the past twenty years, has been made head of the Water Distribution Div.

Breitkreutz completed his college education at the Univ. of Southern California in 1906 and taught the first surveying class at that institution. During the same year, he joined the Los Angeles Water Dept. as instrument man on the aqueduct project, and thus holds one of the longest tenures in the department. He performed both engineering and clerical duties during the construction of the aqueduct and in 1913 was transferred to the Street Mains Div., when the entire office force consisted of only four men. He has been with that division, now known as "Water Distribution," ever since.

(*Continued on page 8*)

(Continued from page 6)

George J. Schroepfer has resigned as Chief Engr. and Supt. of the Sewage Disposal Plant, Minneapolis-St. Paul San. Dist., to accept an appointment as Prof. of San. Eng. at the Univ. of Minnesota. Schroepfer has headed the Twin Cities plant since it was put into operation seven years ago, and the $17,750,000 sewage disposal system has treated 270 mil.gal. of sewage during that period. Schroepfer is Past-Pres. of the Federation of Sewage Works Associations and is a member of the Committee on Water and Sewage Works Development.

Capt. Kerwin Mick, now overseas in the Pacific, has been appointed by the Board of Trustees of the Metropolitan Drainage Com. to succeed George J. Schroepfer as Chief Engr. and Supt. of the St. Paul-Minneapolis Sewage Disposal Plant. Before entering military service in 1942, Captain Mick was Chief Chemist at the plant. He was graduated from the Univ. of Minnesota in 1930 with a degree in Chem. Eng.

W. S. Bronson has resigned from the position of Supt. of Municipal Light and Water, Pt. Madisonville, Ky., after five years there, and is now associated with the General Electric Supply Corp., Louisville, Ky.

(Continued on page 10)

(*Continued from page 8*)

Howard M. Ely, formerly Engineer of the Interstate Water Co., Danville, Ill., died of tuberculosis last spring. He was a Senior Member of the Association, having joined in 1909. He will be greatly missed by several generations of A.W.W.A. members, as he was active in Association affairs for many years. He was one of the organizers of the Illinois Water Works Association, which later became the Illinois Section of the A.W.W.A., and he continued to serve that group until about ten years ago.

Charles H. Bechert, Indianapolis, has resigned as head of the Div. of Eng. of the Indiana Conservation Dept. and has been succeeded by Thomas G. MacKenzie of Gary, Ind. Bechert will continue to serve the state of Indiana as Dir., Div. of Water Resources.

Ross Willis Buck, former Asst. Engr. in the Dayton, Ohio, Dept. of Water, has been commissioned an Asst. Engr. in the U.S.P.H.S. Reserve Corps and is posted at the Illinois Ordnance Plant under the Malaria Control in War Areas program.

(*Continued on page 14*)

(*Continued from page 10*)

The Westchester, N.Y., Water Operators Association held an annual "get-together" at Scarsdale, N.Y., on July 19. About 150 Westchester operators, many of whom are A.W.W.A. members, attended. It has been reported that "on account of inclement weather, the usual sports activities could not be held, but this was made up for by a splendid dinner followed by no speeches." James C. Harding, Westchester County Comr. of Public Works, was elected chairman and Arthur G. Jewell, Supt., Mt. Vernon Water Dept., and J. E. Flanders, Operating Vice-Pres., New Rochelle Water Co., were made trustees.

Correction: In reproducing in the July JOURNAL the graph compiled and executed by Past-Pres. Samuel F. Newkirk Jr. to illustrate membership growth of the Association, the JOURNAL neglected to credit *Taste and Odor Control Journal* for May 1945 with the first publication of the graph. *Taste and Odor Control Journal,* published monthly by the Industrial Chemical Sales Div. of the West Virginia Pulp & Paper Co., devoted a major portion of its May issue to singing the praises of the A.W.W.A.

(*Continued on page 18*)

(*Continued from page 14*)

Waukesha, Wis., has made postwar plans to enlarge and enclose its 57-year-old water tank. Fabricated of wrought-iron plates in 1888, the tank has been in continuous service ever since. It has been painted only twice in the past twelve years, and is in such excellent condition that 6 ft. will be added to its height and a wrought-iron cover constructed to provide the increased water storage needed to supply Waukesha's population increment of recent years.

Louisiana State Univ. has recently issued, as an Engineering Experiment Station Bulletin, the "Proceedings of the Seventh Annual Short Course (1944)." The annual short course is sponsored by the university, the State Dept. of Health and the Louisiana Conference on Water Supply and Sewerage. This is the first publication of the short course proceedings. The volume contains eight papers of general interest, eight dealing with water supply, three concerned with sewerage and an abridgement of the minutes of the annual meeting of the Louisiana Conference on Water Supply and Sewerage.

(*Continued on page 20*)

(*Continued from page 18*)

B. G. Cole, recently Water Plant Supt., Austin, Tex., has been appointed Chief Chemist in charge of water filtration and purification, at the Shreveport, La., Dept. of Water and Sewerage. In his Texas post, Cole was in charge of water purification and the operation and maintenance of mechanical equipment. For more than eleven years before that, he was Chief Chemist in charge of water purification and pumping stations, Monroe, La. Cole has served as Trustee of the Southwest Section of the A.W.W.A. and is a member of that section's Publication Com. He is Past-Chairman and Secretary of the Louisiana Conference on Water Supply and Sewerage.

David H. Harker, former Chief of Staff of the Ohio Water Supply Board, has been appointed Chief Engr. of the Indiana Flood Control and Water Resources Com., Indianapolis. Harker, who was graduated from Purdue Univ. with a degree in Civ. Eng. in 1924, was engaged in drainage and flood control work for twenty years. He was land drainage specialist associated with Purdue from 1936 to 1942, and for three years in the thirties was engaged in the appraisal of utilities.

(*Continued on page 40*)

Changes in Membership

NEW MEMBERS

Applications received July 1 to 31, 1945

★ *denotes military service*

Ackerman, Judson B., Lt. (j.g.), CEC, USNR, 1182 Market St., San Francisco, Calif. (July '45)★

Bhoota, B. V., Sales Engr., Foreign Div., The Dorr Co., 570 Lexington Ave., New York 22, N. Y. (July '45)

Blesse, John H., Chemist, Water Works, 719 N. East St., Jacksonville, Ill. (July '45)

Carroll, John T., Salesman, Indiana Meter Div., Worthington Pump & Machinery Corp., La Salle Hotel, South Bend, Ind. (July '25)

Carter, P. B., Jr., *see* Illinois Water Treatment Co.

Crampton, C. J., *see* San Antonio Chamber of Commerce

Ferry, Earle J., Asst. Supt., Board of Water Supply, 108 N. High St., Mt. Vernon, N. Y. (July '45)

Giesey, V. A., Pres., Narco Products Co., 1704 W. Carson St., Pittsburgh 19, Pa. (July '45)

Hamig, Louis L., Partner, Ferris & Hamig, Cons. Engrs., 3238 Olive St., St. Louis, Mo. (July '45)

Hoppe, T. C., Assoc. Chemist, Dept. of Chem. Eng., Tennessee Valley Authority, Wilson Dam, Ala. (July '45)

Illinois Water Treatment Co., P. B. Carter Jr., Secy.-Treas., 820 Cedar St., Rockford, Ill. (Assoc. M. July '45)

Johnson, W. E., Civ. Engr., Box 1324, Jackson, Miss. (Jan. '45)

(*Continued on page 30*)

(*Continued from page 28*)

Kitson, Sydney W., Mgr., Public Works Div., Worthington Pump & Machinery Corp., Harrison, N.J. (July '45)

Knodel, Adolph Robert, Prof. Scientific Asst. Grade III, State Water Survey Div., 507 Alliance Life Bldg., Peoria 2, Ill. (July '45)

Langford, Fred, Overseer, Bleaching & Water Filtration Plant, Union Bleachery, Box 900, Greenville, S.C. (July '45)

LaRoche, George F., Water Comr., City Water Dept., City Hall, Faribault, Minn. (Apr. '45)

Lockner, R. J., Street & Water Supt., Box 123, Cooperstown, N.D. (July '45)

Radiger, Henry, Supt., The Home Water Co., Chesterton, Ind. (Jan. '45)

San Antonio Chamber of Commerce, C. J. Crampton, Vice-Pres. & Gen. Mgr., 700 Insurance Bldg., San Antonio 5, Tex. (Corp. M. July '45)

Schmidt, L. A., Jr., Engr., Chattanooga Bank Bldg., Chattanooga, Tenn. (July '45)

Shroyer, Edward, Supt., Filter Plant, Water Dept., Fairmont, W.Va. (Jan. '45)

Stearns, Donald E., Prof. & Chairman, Dept. of Civ. Eng., College of Applied Science, Syracuse Univ., Syracuse 10, N.Y. (July '45)

Stratton, Robert D., P.A. Engr. (R), U. S. Public Health Service, State Dept. of Health, 65 Court St., Buffalo 2, N.Y. (July '45)

Taylor, Samuel S., Bacteriologist-Chemist, 23 Atno Ave., Morristown, N.J. (July '45)

Tucker, Belden S., 421 Seaside Ave., Honolulu, T.H. (July '45)

(*Continued on page 32*)

(*Continued from page 30*)

Wankmuller, Jacob T., Supervising Engr., Federal Works Agency, Box 211, Williamsburg, Va. (Jan. '45)

Yandre, Thomas E., Lt. (j.g.), CEC, USNR, Public Works Officer, U.S. Naval Hospital, Corvallis, Ore. (July '45)★

REINSTATEMENTS

Gerlach, George M., Gen. Supt., Gulf Public Service Co., Inc., New Iberia, La. (Oct. '42)

Hannan, J., Jr., Mgr., Micam Construction Corp., 4720 Baltimore Ave., Hyattsville, Md. (June '30)

LOSSES

Resignations

Weisemann, Thomas W., Supt., Home Water Co., Chesterton, Ind. (Jan. '41)

Zufelt, Jerome C., Supt., City Water Dept., 418 St. Clair Ave., Sheboygan, Wis. (Oct. '31) *M*

Deaths

Ely, Howard M., Engr., Interstate Water Co., Danville, Ill. (June '09)

Sybrandt, John L., Sales Repr., Ludlow Valve Mfg. Co., 7 S. Dearborn St., Chicago 3, Ill. (Apr. '34) *MP*

Changes in Address

Changes of address between July 15 and August 15, 1945

Abrams, Norman H., 1043 N. 34th St., Waco, Tex. (Oct. '39) *M*

(*Continued on page 34*)

(*Continued from page 32*)

Alexandria Water Dept., R. L. Martin, City Chemist, City Hall, Alexandria, La. (Corp. M. Jan. '43)

Armco Drainage & Metal Products, Inc., R. C. Beam, Mgr., Welded Pipe Sales Div., Middletown, Ohio (Assoc. M. Jan. '27)

Ballou, Arthur F., Engr., Box 997, Oak Bluffs, Mass. (Aug. '24) *M*

Brader, Ralph L. J., Chairman, Northampton Borough Munic. Authority, 1717 Main St., Northampton, Pa. (Jan. '45)

Branson, William S., 1218 S. Third St., Louisville, Ky. (Jan. '40) *M*

Brownstead, J. P., Supt. of Water Works, 1428 Lexington Ave., Ashland, Ky. (Apr. '38) *Fuller Award '41. MP*

Butler, T. C., Jr., Hydr. Engr., Pomona Pump Co., Route 5, Boise, Idaho (Jan. '40)

Clark, Horace L., 18 Lebanon St., Sanford, Me. (Apr. '30) *M*

Cole, B. G., Chief Chemist, Water & Sewerage Dept., City Hall, Shreveport, La. (Oct. '39) *MP*

Cook, Paul D., 85 Mentor Ave., Painesville, Ohio (Mar. '34)★

Corbin, Malcolm D., 2170 E. Jefferson, Detroit, Mich. (Apr. '43)

Dannenbaum, J. B., 2136 Albans Rd., Houston 5, Tex. (Oct. '44)

De Groot, J. C., Mgr., Northampton Borough Munic. Authority, 1717 Main St., Northampton, Pa. (Jan. '31) *AMP*

Ferguson, S. F., 1611 Richmond Ave., Columbus 3, Ohio (Assoc. M. Apr. '44)

Fogelman, Claude C., Secy.-Treas., Northampton Borough Munic. Authority, 1717 Main St., Northampton, Pa. (Apr. '44) *A*

Goit, Laurance E., Chief. Engr. of Water Works & Deputy Gen. Mgr., Dept of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Oct. '34) *Goodell Prize '37. M*

Grant, Burton S., Asst. Chief Engr. of Water Works, Dept. of Water & Power, Box 3669 Terminal Annex, Los Angeles 54, Calif. (Oct. '34) *M*

Harker, David H., Chief Engr., Flood Control & Water Resources Com., Board of Trade Bldg., Indianapolis 4, Ind. (Jan. '45)

(*Continued on page 36*)

(*Continued from page 34*)

Hawkins, Karl W., Field Engr., The Pitometer Co., 1608 Fairview Ave., Park Ridge, Ill. (Apr. '44)

Hines, Paul L., Service Engr. & Sales Repr., Mueller Co., 602 N. 35th St., Fort Smith, Ark. (Jan. '43)

Hoefle, K. F., Acting Supt., City Water Works, City Hall, Dallas 1, Tex. (Apr. '40) *M*

Hood, E. J., 7110 Ilex St., Houston 12, Tex. (Jan. '44) *MP*

Hoyt, Earle S., State Dept. of Health, Columbus 15, Ohio (May '30)

Hunter, Homer A., Asst. City Mgr., City Hall, Dallas 1, Tex. (July '41) *M*

Kautz, Samuel F., Chem. Feeder Operator, City Water Works, 21 S. "C" St., Hamilton, Ohio (July '43) *MP*

Lordley, H. E., Dept. of Public Utils., City Hall, Richmond, Va. (Jan. '36)

Louis, Leo, 5408 W. 15th St., Indianapolis 8, Ind. (Jan. '42) *P*

Lowe, James C., Field Engr., Oliver United Filters, Inc., 33 W. 42nd St., New York 18, N.Y. (Oct. '43) *MP*

Malot, John Woodrow, Capt., 656th Engr., Topographic Battalion, Camp Swift, Tex. (Jan. '45)★

Martin, R. L., *see* Alexandria Water Dept.

McCloskey, Joseph A., Box 2515, Carmel, Calif. (Jan. '44) *P*

McGonigale, Wm. J., Treas., Interstate Water Co., 1816 S. 3rd St., Louisville 8, Ky. (Apr. '12)

Nilmeier, Herbert P., 717 Buchanan St., Albany 6, Calif. (Jan. '45)

Quick, James L., San. Engr., 1410 Roache St., Indianapolis 8, Ind. (Jan. '45)

Rawlins, George S., Exec. Vice-Pres., J. N. Pease & Co., Inc., 119½ E. 5th St., Charlotte 2, N.C. (Oct. '39) *P*

Robertson, George C., San. Engr., c/o Armco International Corp., Middletown, Ohio (Oct. '44)

Rollins, F. L., Major, C.E., O.R.C., 640 W. Market St., Akron, Ohio (Apr. '44) *MP*★

Schroepfer, George J., Prof. of San. Eng., Univ. of Minnesota, Minneapolis, Minn. (July '43) *M*

(*Continued on page 38*)

(*Continued from page 20*)

James E. Jagger, who has been functioning in the capacity of Acting Asst. Secy. of the American Society of Civil Engineers for the past three years, has been appointed Asst. Secy. by the Society's Board of Direction. He first became affiliated with the administration of the Society as Field Secy. four years ago.

Jagger was graduated from Massachusetts Institute of Technology in 1924, and went from there to Georgia where he worked for two years on hydro-electric developments for Stone and Webster, Inc. After another two years with a consulting engineering firm in Birmingham, Ala., he joined the staff of the Alabama Water Service Co. in that city and served as Chief Engr., Vice-Pres. and member of the Board of Directors.

George F. Axt, for some years a member of the faculty of Pratt Institute, New York, has been placed in charge of the newly-opened New York offices of Gannett Fleming Corddry and Carpenter, Inc., Engrs., Harrisburg, Pa. Axt is an architect and engineer whose recent engagements have included, among others, that of Architect Consultant to the Engr., New York Munic. Airport, Idlewild; for three years, Asst. Re-

(*Continued on page 44*)

(*Continued from page 40*)

gional Supervisor for the Home Owners' Loan Corp., New York; and technical production and supervisory work on four air bases in the Caribbean area. He has also had extensive architectural experience.

James C. Lowe, former Field Engr. with the Permutit Co., recently resigned from his position as Tech. Asst. for Sinclair Rubber, Houston, Tex., and is now connected with Oliver United Filters, Inc., New York, as Field Engr. in their Sales Development Dept. Lowe supervised the erection and initial operation of the water treatment plants at Kopper's Butadiene, near Pittsburgh, Keystone Ordnance and other large plants. He is now devoting his energies to the process filtration field.

F. V. Sohle, Southwestern Repr. for the R. D. Wood Co., manufacturers of fire hydrants and gate valves, is now representing, in addition, Northrop & Co., Inc., manufacturers of jointing materials and equipment for cast-iron water mains. He has opened new offices in the Construction Bldg., Dallas 1, Tex.

(*Continued on page 46*)

(*Continued from page 44*)

"Water Lines" of the Indianapolis Water Co. for July 27, had the following meter reader's adventure to report:

Harold Fox believes in the Friday the 13th superstition. While reading meters that day, a dog took after him. Harold lost his trouser seat escaping. Then, re-trousered, he ripped the new pair on a nail in a basement. Not content, a wire on a gate cut his leg. Waiting for a trolley, he was hit by a hit-and-run driver. The police, after capturing the driver, returned and took Fox to the hospital for treatment. However, he played safe and refused to ride the ambulance home. Afraid his grandmother would see it drive up and have to make the return trip in it.

Roy Gordon Thompson, So M3/C, another Indianapolis meter reader, wrote home from the high seas:

I was down in the engine room today and guess what I ran across? A nice memory-bringing water meter! Not exactly like the ones I used to read but it looked pretty good. Water was measured in gallons instead of cu.ft. like we have. You see, we make our own drinking water. They make it in an evaporator and then we have it stored in tanks in the bilges. That way we have it all over the Army since we have good cold, pure water to drink all the time. . . . Oh, by the way, when we were in Manila, I saw a Ford Meter Box on a curb. They must have those all over the world. It was all broken, but I could still read it. I can't remember offhand, but it had been used quite a bit.

(*Continued on page 48*)

(Continued from page 46)

The Sixth Annual Water Conference of the Engineers' Society of Western Pennsylvania will be held in the Hotel William Penn, Pittsburgh, Pa., on October 22 and 23. The proceedings of the Fifth Annual Water Conference, held Oct. 30–31, 1944, have been published, and copies may be obtained at $3.50 a piece, from H. M. Olson, Chairman, Water Conference, Engineers' Society of Western Pennsylvania, Hotel William Penn, Pittsburgh.

Saginaw, Mich., where meter readers used to distribute the water bills, has introduced postal card billing, with emminently satisfactory results. The cards provide surer delivery at reduced expense, with less

(Continued on page 52)

(*Continued from page 48*)

supplementary cost and trouble preparing duplicate bills for those which became lost under the old method of delivery. Because of the type of billing machines in use, the dates of the period being billed have to be omitted on the postal cards. However, there has not been any consumer protest against this so far.

The Food Machinery Corp. has purchased the Dayton-Dowd Co., large independent pump company at Quincy, Ill., and will make it a branch of the Peerless Pump Div., Los Angeles. Clarence M. Frazier, Vice-Pres. of Peerless Pump, will be in charge. Henry J. McKenzie, formerly Asst. Mgr., Peerless Pump Div., will be manager of the new branch in Quincy.

(*Continued on page 54*)

(*Continued from page 54*)

canized circumferential seams and stave pockets. The vinyl-coated tank is essentially of two-ply construction, fabricated from spread-coated fabric, using sewn radial seams and with zipper closures on stave sheaths. A circular ground cloth provides protection against puncture of the bottom of the GR-S-coated tank. Although a ground cloth is shown under the vinyl-coated tank also, it is not actually needed because of the multi-ply construction.

Each tank is 11 ft., 3 in. in diameter, with a 54-in. sidewall and a capacity of 3,000 gal. The GR-S-coated tank weighs 350 lb. and the vinyl-coated tank weighs 300 lb. Both the synthetic-rubber-coated and the vinyl-coated fabrics are completely watertight, mildew resistant, durable, stronger than canvas, non-toxic and impart no taste or odor to the water.

Widely used for metering water at ordinary temperatures, the Builders Propeloflo Meter is now available at no extra cost for metering hot water up to 250° F. A special high-temperature grease is employed for efficient lubrication. Venturi design and all other special features of the meter are retained. The Builders Propeloflo Meter is manufactured by Builders-Providence, Inc. (Div. of Builders Iron Fdry.), Providence 1, R.I.

NEWS OF THE FIELD

The Office of War Utilities terminated its activities on September 28, 1944. This important agency of the War Production Board began its work as the Power Branch early in 1942 under the leadership of J. A. Krug, now Chairman of the War Production Board. In August of 1942, the Water Division was organized under the direction of Arthur Gorman.

The American Water Works Association can properly speak for the industry and state that the Office of War Utilities and its Water Division have rendered invaluable service to the American public through their intelligent support of the needs of the water works field for materials required in support of the war effort.

In rendering this broad and fundamental service it has repeatedly been necessary for the WPB to deny or modify applications for material requested by water works agencies. But no water utility has failed to meet the real needs of the war effort, so far as it was called upon to meet them, because of the denial of its requests by the WPB.

In retrospect it appears possible that more frankness concerning the critical nature of the over-all supply situation might have reduced the irritation of those water works executives who were denied what they wanted. But who is so naïve as to assume that frankness can ever be a part of making war? The enemy always has his listening posts and the part of the good utility executive in war is to produce more and more under greater and greater restrictions. That is just what all the utilities—water, gas, power, communications, transportation, etc.—did. And they did it with the effective support of the War Production Board through its Office of War Utilities. To Nelson, Krug, Marks, Falck and, most of all, to Gorman (and to Wolman behind the scenes) the water supply field pays tribute.

President Truman, in his recent message to the Congress, strongly emphasized the danger in setting up a public works program that would compete with private industry for material and manpower. "States and local governments should be encouraged to construct useful public works of the types that must necessarily supplement and go along with the private construction of homes and industrial facilities. If private construction is to move forward at a rapid rate, it is vitally important that local governments promptly proceed with the construction of such facili-

(Continued on page 2)

(*Continued from page 1*)

ties as streets, sewers, water supply, hospitals, airports, schools and other necessary public facilities. Such projects should be undertaken at this time where they supplement and encourage private construction, not where they compete with it for manpower and materials." This gives repetition, through the voice of the nation's leader, to the ideas expressed by the Committee on Water and Sewage Works Development: "Promote to the fullest extent public works which serve the community and the industries located there so long as the works are planned upon a self-supporting basis and so long as they are clearly needed to promote the growth of the city and its industries."

The factors for industrial progress are so powerful just now that wisdom will lead the nation to give these factors the opportunity to get peacetime pursuits under way. If, in the temporary period of readjustment and transfer of labor from war production to peacetime products, the "pump-priming" idea of emergency public works gets rampant and gains Congressional support, the competition which President Truman fears will dislocate, if not seriously impede, the normal travel towards recovery and progress.

(*Continued on page 4*)

(*Continued from page 2*)

Roland C. Harris, Civic Commissioner of Public Works, Toronto, Canada, died suddenly on September 3 at the age of 70. He was an Honorary Member of the A.W.W.A.

Much of the water and sewage works system in Toronto was constructed under Mr. Harris's leadership. He became works commissioner when the department was formed in 1912. His first job was as an office boy in the City Hall. In 1899, he entered civil service and was Property Commissioner by 1905, at the age of 30, and Street Cleaning Commissioner by 1910. He held many important public appointments, serving on numerous boards where his varied knowledge was found valuable. He was well known and popular in the Toronto government and in the press for his forthright reports on the affairs of his department and for his clarity in answering questions concerning those affairs. His recommendations were nearly always accepted by the Toronto City Council.

Although Mr. Harris had not had specialized engineering training, he was a prodigious reader of technical material in the field and was considered to have a broad engineering knowledge.

Joseph L. Quinn Jr. has resigned from his positions as State San. Engr. of the Indiana State Board of Health, Technical Secy. of the Indiana Stream Pollution Control Board and a member of the Flood Control and Water Resources Com., to assume the duties of Asst. to Pres. Anton Hulman Jr. of Hulman & Co., Terre Haute, Ind., manufacturers of Clabber Girl Baking Powder. Hulman is Chairman of the Indiana Flood Control and Water Resources Com., and is engaged in several other public service activities.

Quinn is Chairman of the Indiana Sec., A.W.W.A., and won the 1945 Fuller Award in that section. He is also Secretary of the Public Health, Water and Sewerage Development Organization and is officer or member of a number of other technical organizations and societies. He was graduated from Purdue Univ. with the degrees of B.S.C.E. and C.E., and had been employed by the Indiana State Board of Health since 1939. Before

(*Continued on page 6*)

(*Continued from page 4*)

that he was with the State Highway Com. and with several city civil engineering offices. During the war years he was Acting Director of the Div. of Environmental Sanitation of the Indiana State Board of Health.

I. M. (Mike) Glace, Engr. of Harrisburg, Pa., "was either pushed or fell" into a tank at a sewage treatment plant at Northampton, Pa., recently. *Results:* Several cracked ribs and several weeks' immobilization. His water works friends have advised Glace that, while one can fall as far in a water treatment plant, the end results are not so unsatisfactory. *Moral:* Stick to water.

J. R. Hurtado, Chem. and San. Engr. of Caracas, Venezuela, has been appointed Director of the Laboratory of Water Analysis of the Inst. of Sanitary Works in Caracas. Hurtado, born in 1914 in Barcelona, Venezuela, was graduated from the Central Univ. of Venezuela with a C.E. degree in 1938, and from 1938 to 1943 was laboratory assistant in water chemistry in the Caracas Bureau of Public Works. In 1944–45 he earned an M.S. degree at the Univ. of Florida, doing work under Dr. A. P. Black.

(*Continued on page 8*)

(*Continued from page 6*)

Robert C. Ratcliffe, Office Engineer, Bureau of Reclamation, Cheyenne, Wyo., died on August 16 at the age of 42.

Mr. Ratcliffe was born in Louisiana and grew up in Colorado, working his way through college there and gaining a B.S.C.E. in 1927. After a number of years' experience in the highway departments of Iowa, Wyoming and Colorado he was appointed Chief of the Department of Public Works at Grand Junction, Colo. Part of his duties there were as director of engineering, construction and maintenance of the water and sewerage systems.

In 1940 and 1941 Mr. Ratcliffe was engaged on the design of water and sewerage, among other utilities, at Fort F. E. Warren Replacement Center, the Evanston, Wyo., sewage disposal plant, and a small arms ammunition plant at Denver and he designed the sewage works at Camp Carson, Colo.

Shortly after Pearl Harbor he joined the U.S. Engineers as Associate Civil and Sanitary Engineer, and as such designed or reviewed the designs of all water and sewerage construction under the jurisdiction of the Albuquerque District Office. After the completion of the major part of the construction program he was assigned to Hobbs Army Airfield as Sanitary Engineer. He had only recently joined the Bureau of Reclamation.

Lt. Kenneth G. Barnhill, former Estimating San. Engr. with the Permutit Co., New York, is Post San. Officer and Asst. Post Medical Inspector at the Marianna, Fla., Army Air Field. Barnhill received a B.C.E. degree from the College of Eng., New York Univ., in 1939.

William H. Carper, City Mgr. of Clifton Forge, Va., for the past two years, is now an engineer on the State Planning Board of Virginia, assisting localities on planning and zoning programs and making statewide studies of such problems. Carper was Trustee of the Virginia Sec., A.W.W.A., for the 1944–45 term. A graduate of Roanoke College, 1936, and Virginia Poly. Inst., 1938, Carper has also been City Engr. of Fredericksburg, Va., and City Mgr. of Culpeper, Va.

(*Continued on page 12*)

(Continued from page 8)

Henry G. Acres, President of H. G. Acres and Company, Consulting Engineers, Niagara Falls, Ontario, died on September 4 at the age of 65 in Toronto.

Mr. Acres was educated at the University of Toronto and first achieved professional prominence in 1905 when he put into operation the first 10,000-hp. turbine ever built. He was then Assistant Mechanical Engineer of the Canadian Niagara Power Co. Two years later he was in charge of the construction of the first 110,000-v. transmission line ever built.

He attained the reputation as one of Canada's leading hydro-electric engineers and recently was in charge of design and supervision of the Chippawa-Queenston development of the Ontario Hydro-Electric Power Commission and the Shipshaw development of the Aluminum Company of Canada at Arvida, Que. The 1,200,000-hp. Shipshaw project, largest localized power development in the world, opened in November 1942.

(Continued on page 14)

(Continued from page 12)

Col. Harold B. Gotaas, Sn.C., formerly Chief of the Eng. Sec., Office of the Co-ordinator of Inter-American Affairs, has been appointed President of the Institute of Inter-American Affairs, succeeding General Dunham, who is retiring because of ill health. The Institute carries on co-operative agricultural, health and sanitation programs in conjunction with the other American republics.

Lt. Howard T. Harstad, U.S.C.G.R., is now Executive Officer of a construction detachment "somewhere in the Pacific." A civil engineering graduate of the Univ. of Washington, class of 1938, Lieutenant Harstad spent the next three and a half years as San. Engr. for Pierce County, Tacoma. He also did work on the Mud Mountain Dam for the U.S. Engr. Dept. He enlisted in the Coast Guard in 1942 and has been on convoy duty in the Atlantic and aboard the U.S.S. Mochias PF 53 in the Philippines, New Guinea and other parts of the Pacific.

S. Logan Kerr, formerly an hydraulic engineer in Philadelphia, has accepted an engagement with the Fischer and Porter Co., Hatboro, Pa.

(Continued on page 16)

(*Continued from page 14*)

E. J. Hood, former Supt. of the 9-mgd. filter plant of the Central Power & Light Co., Laredo, Tex., has accepted an appointment as Asst. San. Engr. in the Sanitation Div. of the Houston, Tex., Water Dept. He is supervising main sterilization, cross-connections, sample collection, etc.

Hood was first engaged at the experimental water clarification plant in Austin, Tex., in 1924 and transferred to the new filter plant there the next year. In 1927 he took charge of the rapid sand filter plant at Nuevo Laredo, Tamps, Mexico, and remained there until joining the Laredo, Tex., company in 1932. Hood received a B.S. degree at the Univ. of Texas in 1926.

Jess B. Johnson transferred on August 1 from the Sturgeon Bay, Wis., Utilities, with which he had been associated for fifteen years, to the Hartford, Wis., Utilities, where he has accepted the post of Supt. and Engr. He is in charge of water, electricity, central heating and sewage treatment. Postwar plans for the utility include doubling the generating capacity and relieving an extreme water shortage. The water is at present obtained from wells outside of the city.

(*Continued on page 18*)

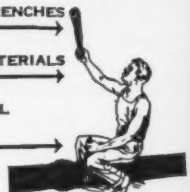
(*Continued from page 16*)

Lewis H. Kessler, for the past two years Prin. Civ. Engr. (San.) in the Corps of Engineers, Washington, D.C., has returned to the Univ. of Wisconsin, where he has been appointed Professor of Civ. Eng. and placed in charge of the Subdiv. of Hydr. and San. Eng. within the Div. of Civ. Eng. He had been Acting Chairman of the subdivision before enlisting in the war effort.

W. C. Staeffler, after 30 years in the water and electric utilities field, has resigned from his post as Gen. Mgr. of the Manitowoc, Wis., Public Utilities to become Gen. Mgr. of the Eastman Mfg. Co., Wilmington, Del. The Eastman Mfg. Co. is a newly-organized corporation engaged in the manufacture and sales of patented pressed-on hydraulic high-pressure hose couplings and assemblies of all kinds, used for air, water and oil pressure systems.

Paul R. Baird, formerly Water Engr. at the Du Pont plant in Childersburg, Ala., is now with the Army Technical Service Forces and is stationed at Camp Lee, Va.

(*Continued on page 22*)



(*Continued from page 18*)

Leland Glidden, former Pres. of the New Canaan, Conn., Water Co., has been honorably discharged from the ski troops after two years of service and is now Vice-Pres. of the Ranney Water Collection Corp., New York.

Glidden participated in the Aleutian Island campaign in 1943 and was stationed in Kiska for the following year. He then went to the Engineers School at Ft. Belvoir, Va., and upon completion of the course he was transferred to Ft. Lewis, Wash., where he helped train engineer troops.

Charles Stewart Mott, Director and former Vice-Pres. of General Motors Corp., recently donated a new field house to Stevens Inst. of Technology, Hoboken, N.J., of which he is an alumnus. Stevens's present gymnasium facilities are overcrowded, and the need is expected to increase with the rising postwar enrollment foreseen in engineering colleges.

Mott owns, wholly or in part, the St. Louis Water Co., the Illinois Water Service Co., the Northern Illinois Water Corp. and the Long Island Water Corp.

(*Continued on page 42*)

Changes in Membership

NEW MEMBERS

Applications received August 1 to 31, 1945
★ *denotes military service*

Andrews, Harry S., *see* Fulton Water Dept.

Barbeito, Arturo Auderut, Engr., Charcas 1840, Buenos Aires, Argentina, S.A. (Jan. '45)

Bodach, Charles M., Research Chemist, Dearborn Chemical Co., 1029 W. 35th St., Chicago 9, Ill. (July '45)

Bogart, Dean B., Asst. Hydr. Engr., U.S. Geological Survey, Box 2529, Miami 15, Fla. (July '45)

Cochrum, G. Wesley, Meter Shop Foreman, City Water Dept., 812 E. 15th St., Winfield, Kan. (July '45)

Cox, K. E. (Miss), *see* West Virginia State Health Dept.

Dow Chemical Co., The, Texas Div., Library, Miss K. Flaniken, Freeport, Tex. (Corp. M. Jan. '45)

Dunlap, Lilburn, Sr., Supt., Water Dept., Christiansburg, Va. (July '45)

Evans, W. F., Jr., *see* Wilmington Water & Sewerage Dept.

Fulton Water Dept., Harry S. Andrews, City Engr., Fulton, N.Y. (Corp. M. July '45)

Greenspon, A., Treas., Jos. Greenspon's Son Pipe Corp., National Stock Yards, St. Clair Co., Ill. (July '45)

Hurd, Charles H., Cons. Engr., 333 N. Pennsylvania St., Indianapolis 4, Ind. (Jan. '45)

(Continued on page 30)

(*Continued from page 28*)

Jost, Arthur P., Mgr., Ocean County Water Co., 516 Main Ave., Bay Head, N.J. (July '45)

Kachelhoffer, Fred G., Instructor, Civ. Eng., Oregon State College, Route 2, Box 141, Corvallis, Ore. (July '45)

Kopf, M. George, Mgr., Technical Specialties Co., 63 Virginia Ave., Dayton 10, Ohio (July '45)

Lapworth, Charles Frank, Limen, Orchehill Ave., Gerrards Cross, Bucks, England (July '45)

Lasley, James B., Asst. Foreman in Charge of Power, North Carolina Shipbuilding Co., Wilmington, N.C. (July '45)

Lenz, Arno T., Assoc. Prof. of Civ. Eng., Univ. of Wisconsin Hydr. Lab., Madison 6, Wis. (July '45)

Loving, M. W., Cons. Engr., 228 N. La Salle St., Chicago 1, Ill. (July '45)

Meeker, Robert H., Asst. Mgr., Wichita Water Co., 301 N. Main St., Box 1442, Wichita 1, Kan. (July '45)

Minnesota & Ontario Paper Co., William H. Schlafge, Chief Control Chemist, International Falls, Minn. (Corp. M. July '45)

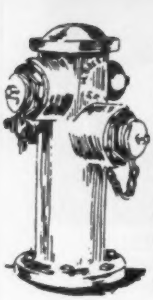
Perazzo, Roberto J., Engr., Potosi 4052, Buenos Aires, Argentina, S.A. (Jan. '45)

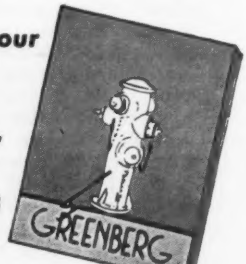
Rhinehart, J. R., The Permutit Co., 215 Pershing Rd., Kansas City 8, Mo. (Oct. '45)

Schlafge, William H., *see* Minnesota & Ontario Paper Co.

Spencer, Daniel Y., Chem. Engr., Panhandle Eastern Pipe Line Co., Kresge Bldg., Jacksonville, Ill. (July '45)

(*Continued on page 32*)





(*Continued from page 30*)

Texas Div., *see* Dow Chemical Co., The

Thornton, George, Supt., Water Dept., Kinsley, Kan. (July '45)

Wall, George W., Engr., Birmingham Industrial Water Supply System, 1913—4th Ave., N., Birmingham, Ala. (July '45)

Wallace, D. W., Branch Mgr., American Cast Iron Pipe Co., 941 Plymouth Bldg., Minneapolis, Minn. (July '45)

Wesby, Vernon L., Gen. Foreman, Utilities Operating Dept., Electro-Motive Div., General Motors Corp., LaGrange, Ill. (July '45)

West Virginia State Health Dept., K. E. Cox, Director of Lab., Hygienic Lab. Div., Charleston, W.Va. (Corp. M. Jan. '45)

Williams, George W., Supt. of Public Utilities, Board of Public Utility Com., 109 Maple St., Sheboygan Falls, Wis. (July '45)

(*Continued on page 34*)

(*Continued from page 32*)

Wilmington Water & Sewerage Dept., W. F. Evans Jr., Supt., Wilmington, N.C. (Corp. M. July '45)

Wilson, H. K., 2126—14th St., S., St. Petersburg, Fla. (July '45)

REINSTATEMENTS

Holy, William E., P.A. San. Engr. (R), U.S. Public Health Service, 2912 Dinwiddie St., Fairlington, Va. (July '34)

Keeping, Clarence A., Engr. of Roads & Streets, City of Winnipeg, 233 James Ave., Winnipeg, Man., Can. (Jan. '41)

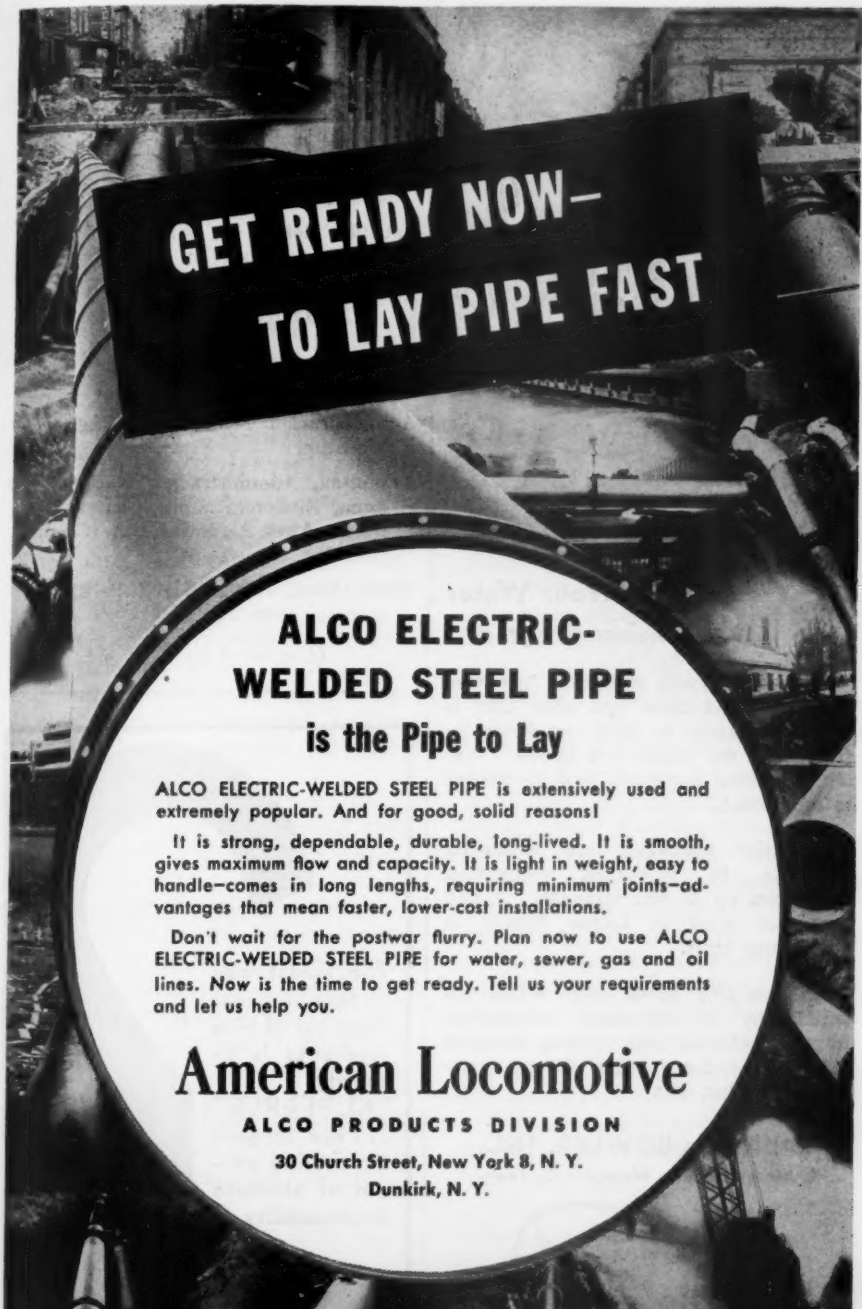
McCurdy, Howard, Cons. Engr., 4875 Pacific Blvd., Vernon, Los Angeles 11, Calif. (Dec. '25)

LOSSES

Resignation

Buchanan, Hugh, Cia Consolidada de Aguas, Corrientes del Rosario Ltda., Rosario de Santa Fe, Argentina, S.A. (June '24)

(*Continued on page 36*)


GET READY NOW–
TO LAY PIPE FAST
ALCO ELECTRIC-
WELDED STEEL PIPE
is the Pipe to Lay
ALCO ELECTRIC-WELDED STEEL PIPE is extensively used and extremely popular. And for good, solid reasons!
It is strong, dependable, durable, long-lived. It is smooth, gives maximum flow and capacity. It is light in weight, easy to handle—comes in long lengths, requiring minimum joints—advantages that mean faster, lower-cost installations.
Don't wait for the postwar flurry. Plan now to use ALCO ELECTRIC-WELDED STEEL PIPE for water, sewer, gas and oil lines. Now is the time to get ready. Tell us your requirements and let us help you.
American Locomotive
ALCO PRODUCTS DIVISION
30 Church Street, New York 8, N. Y.
Dunkirk, N. Y.
BUY WAR BONDS

(*Continued from page 34*)

Deaths

Curtis, Wm. E., Mgr., Belmont County Water Dist., Belmont, Calif. (July '35)

Harris, R. C., Comr. of Works, City Hall, Toronto, Ont., Can. (Jan. '41) *Honorary M. '41.*

Ratcliffe, Robert C., 3519 Hynds Blvd., Cheyenne, Wyo. (Jan. '37) *MP*

Changes in Address

Changes of Address between August 15 and September 15, 1945

Administracion Nacional del Agua, *see* Argentina

Argentina, Administracion Nacional del Agua, Biblioteca, Calle Charcas 1840, Buenos Aires, Argentina, S.A. (Corp. M. Jan. '26)

Baird, Paul, 711 Highland Park, Chattancoga, Tenn. (July '44)

(*Continued on page 38*)

(*Continued from page 36*)

Carper, W. H., State Planning Board, Richmond, Va. (Apr. '43) *AM*

Christopher, J. B., Supt., Warrensburg & Pertle Spring Water Co., Box 342, Warrensburg, Mo. (July '35) *M*

Coffin, Edwin F., Jr., 1st Lt., Asst. Engr. (R), U.S. Public Health Service, Box 491, Gainesville, Fla. (Jan. '45)★

Daniel, Laurence H., Box 531, Havana, Cuba (Apr. '39)

Dietz, Irving M., Jr., Hydr. & San. Engr., Box 27, Corpus Christi, Tex. (July '45)

Glidden, Arthur L., Vice-Pres., Ranney Water Collector Corp. of New York, 33 W. 42nd St., New York 18, N.Y. (July '35)

Hamlin, Francis M., Water Dept., McAllen, Tex. (Apr. '43) *MP*

Hann, Charles B., Industrial Repr., Johns-Manville Corp., 1130 Bancroft Pkwy., Wilmington, Del. (Oct. '44)

Harstad, Howard T., Route 3, Box 386, Puyallup, Wash. (Jan. '42)★

(*Continued on page 40*)

(*Continued from page 38*)

Hood, E. J., Sr. Engr., San. Section, Water Div., 900 Brazos St., Houston 2, Tex. (Jan. '44) *MP*

Horlacher, George A., Engr., Calgon, Inc., 992 Union Commerce Bldg., Cleveland 14, Ohio (Jan. '43)

Johnson, Jess B., Supt. & Engr., Hartford Utilities, City Hall Bldg., Hartford, Wis. (Nov. '31)

Lacour, Leon, Supt. of Water Works, Ville Platte, La. (Oct. '43) *M*

Lauramore, Horace H., Salesman, Johns-Manville Sales Corp., 202 Peninsular Life Bldg., 237 W. Forsyth St., Jacksonville 2, Fla. (Oct. '42)

Mau, Gordon E., Asst. Engr., Iowa State Health Dept., Des Moines 19, Iowa (July '43) *AP*

Purcell, Donald M., R.D. No. 1, Box 118A, Pottsville, Pa. (Apr. '45)

Rew, Myron E., Chemist, City Water Works, 37th & Broadway, Council Bluffs, Iowa (Jan. '44)

Ripley, H. A., Davis, Ripley & Assoc., Cons. Engrs., 218—7th Ave., W., Calgary, Alta., Can. (Oct. '44)

Shillinger, William D., Lt., Station Hospital, Camp Fannin, Tex. (Oct. '44)★

Sloan, Garrett, 4718 New Kent Rd., Richmond, Va. (Apr. '42)

Staeffler, W. C., 1407 Lore Ave., Wilmington 280, Del. (Jan. '37)

Thomson, Medford T., Dist. Engr., U.S. Geological Survey, 411 Grand Theater Bldg., Atlanta, Ga. (Oct. '41)

Vickrey, John U., Sewage Disposal Plant Operator, 1537 N.W. 4th Ave., Fort Lauderdale, Fla. (July '39)

Vilaret, Manuel R., Civ. Engr., Box 718, Vedado, Havana, Cuba (July '45)

Wall, Harold M., 2103 Jefferson St., Paducah, Ky. (Jan. '44) *M*

Wiley, John S., P.A. San. Engr., 206 W. Benson St., Decatur, Ga. (July '43)

Williams, Leon G., Jones & Henry, Cons. Engrs., 3611 Watson St., Toledo 12, Ohio (July '38) *P*

Wood, James, 218 Walnut St., Peekskill, N.Y. (Apr. '37) *P*

Zadigan, Ruben, 1st Lt., APO 795, c/o Postmaster, New York, N.Y. (Oct. '42)★

(*Continued from page 22*)

Golden Underwood, Supt. of the Parkersburg, W.Va., Water Dept., for the past nine years, has been elected mayor of that city for a three-year term. A veteran of World War I, Underwood was in business in Parkersburg until he accepted duty supervising the water plant.

An interesting method of purchase of a private water company by the municipality it serves was recently reported in the Memphis, Tenn., *Press-Scimitar:*

Helena, Ark., Aug. 3—The Helena City Council has signed a contract for the purchase of the Helena water system from Gus B. Walton.

Walton will continue to operate the system for the city for 10 per cent of the net operating revenues.

Helena will pay Walton \$36,000 in 2½ per cent revenue bonds as soon as the bonds are printed and approved. He has the right to convert the bonds, which will mature in 40 years, to a lower coupon bond.

In addition, Walton is to purchase \$65,000 of additional 2½ per cent water works revenue bonds, the proceeds of which will be used for working capital and improvements.

(*Continued on page 44*)

(*Continued from page 42*)

WESTERN PENNSYLVANIA SECTION MEETING

The Western Pennsylvania Section, co-operating with the Western Pennsylvania Water Works Operators, held its Sixth Annual Meeting at Pittsburgh on September 14 at the Roosevelt Hotel, Pittsburgh. Last year's meeting had been canceled because of wartime conditions.

One hundred twenty-five persons were registered by the time the first paper was read. The total registration was 150, but there were probably fifteen or twenty persons who attended the afternoon session but failed to sign up due to the fact that registration for the meeting entailed no charge.

The intent of the program of this meeting was to cover the various phases of water works operation, such as "Management," "Operating Problems," and "Physical Factors Causing the Major Operating Problems."

In "Baffling Sedimentation Basins," R. W. Hayden and W. J. Murdoch showed that even a sedimentation basin designed according to some of the best laws of hydraulics may not necessarily give a satisfactory settled water.

(*Continued on page 46*)

DORR *Clarifiers* . . .

Dorr Clarifiers and Flocculators at Covington, Ky., Water Treatment Plant

proved sound from *Either Angle*

Several hundred installations in the United States and thirteen foreign countries attest to the efficacy and popularity of Dorr Clarifiers for the pre-treatment of water prior to filtration. Dorr Clarifiers have demonstrated their value in water treatment (1) for the pre-sedimentation of turbid water (2) for the sedimentation of chemically flocculated water, and (3) for the sedimentation of water-softening sludge.

Here are some of the features in these many installations that have proved Dorr equipment sound from either angle—construction or operation:

CONSTRUCTION

- **Symmetrical Shape** — (Round or square.) Less form work required.
- **Less Concrete and Steel Used** — Thinner tank walls for circular tanks possible, less reinforcing steel needed — because all stresses are tensile.
- **Simple Tank Work** — No complicated fillets, beams, columns or slab work are used.
- **Simple Overflow** — Tank side forms one side of overflow trough; trough and tank poured as monolithic unit.

OPERATION

- **No Standby Units** — (Except for additional capacity.) Virtually no possibility of mechanical breakage below water line, where dewatering would be necessary to make repairs.
- **Low Power Consumption**— Only 60 to 70% of motor's rated horsepower used for operation. Full power used only to overcome starting torque.
- **Efficient Removal** — Because of location of the weir giving maximum length, efficiency of removal is greater than other types with less weir lengths.
- **Low Maintenance** — Practically no parts to get out of order or require replacement. Drive unit immersed in oil and encased in weatherproof housing.

Dorr Clarifiers are available in two main designs, circular and square. A square top, round bottom type is also available, as well as a unit for installation in rectangular tanks. Sizes range from 10′ to 200′ in diameter and in capacities from 0.03 to 35 MGD.

7033

For complete information on Dorr Water Treatment Equipment write for Bulletin No. −6191, "Sedimentation", and Bulletin No. −6971, "Flocculation and Mixing".

(*Continued from page 44*)

"Foreman Training," as related to both employees and management, was discussed by W. B. Simpson, Hope Natural Gas Co. He brought out that all water works men have their problems in management, whether they employ three men or hundreds. The paper gave management a better outlook on the employee's side of the picture.

The Pollution Control Program of the Pennsylvania State Dept. of Health was thoroughly discussed by such outstanding members of the Pennsylvania Sanitary Water Board as E. A. Holbrook and J. R. Hoffert. C. H. Young and L. S. Morgan, Dist. Engrs. for the State Dept. of Health, brought out the problems involved and described many of the things which the state has done to correct some of the pollution difficulties.

"Raw Water Quality" on the major streams furnishing water to the Western Pennsylvania area was covered by C. F. Drake, F. W. Bouson, B. French Johnson and A. R. Todd.

"Problems in Bacteriology," as presented by Marie A. Murphy, Pittsburgh, and discussed by C. K. Calvert, Indianapolis, Ind., and Professor Harold G. Lang, Carnegie Inst. of Technology, was of particular interest to the chemists and bacteriologists present.

"Determining Ferric Sulfate Dosages" and "Problems in Corrosion" were handled by J. B. Nickle and H. M. Olson.

Charles L. Fox, Gen. Mgr., Pennsylvania Water Co., Wilkinsburg, Pa., was nominated for the Fuller Award, for his contribution to the solving of engineering problems of the water works profession and his untiring efforts to promote knowledge and friendship in the water works associations.

Secy. I. M. Glace, Pres. R. B. Adams, Ted H. Kain and T. G. Braman of the Pennsylvania Water Works Operators Assn. were present and participated in the meeting.

EARLE P. JOHNSON
Secretary-Treasurer

(*Continued on page 50*)

(*Continued from page 46*)

In the report made by Fire Comr. Patrick Walsh to Mayor La Guardia following the plane crash in the Empire State Bldg., the commissioner suggested that "some form of modified fire drill" be held for tenants of skyscrapers and that federal agencies agree on a rule barring air travel over congested sections of the city. In addition he strongly recommended that the city building code be revised to bar cross-sections or other vital parts of a standpipe or sprinkler system in buildings from passing through long shafts where they can be broken by falling debris. Walsh stressed this point because a main 8-in. standpipe was snapped by parts of the falling plane in the fire tower shaft on the 54th floor of the building. This additional accident greatly impeded the work of the firemen, although both water supply and discipline were excellent, and all fires were extinguished within 40 minutes of the accident. As is generally known, an army bomber had crashed into the 79th floor, and flames from burning gasoline swept ten stories and took fourteen lives.

The Chicago Bridge & Iron Co. has opened a new sales office in Atlanta, Ga. H. F. Stearns heads the new branch, which is located in the Healey Bldg.

The North Dakota Water and Sewage Works Conference will be held on November 8 and 9 after all, according to its Executive Committee. It had previously been canceled due to war conditions. The meeting will convene at the Gardner Hotel, Fargo, N.D.

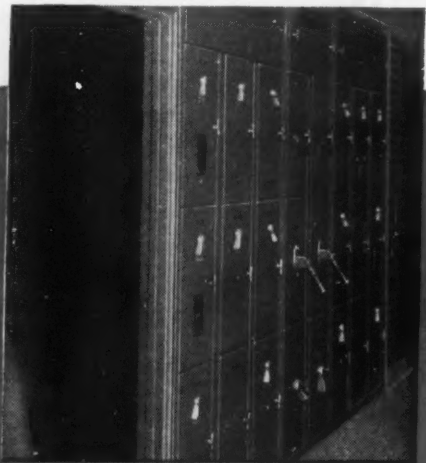
Hearings on the Murray Missouri Valley Authority Bill were opened in Washington on September 18, when the Senate Irrigation and Reclamation Subcommittee heard arguments from reclamation interests in the West and from the governors of the ten states affected. The Senate Commerce Committee had previously made an adverse report on the navigation features of the bill. A later hearing will be held by the Senate Agriculture Subcommittee.

The joint Army Engineers-Reclamation Bureau group, on the other hand, has been making rapid progress on its detailed plans for the development of the Missouri's water resources. The inter-agency committee carries field representatives of the War Dept. Engrs., Interior and Agriculture Depts. and Federal Power Com., as well as four representatives of the ten governors. The plans will be acted on as soon as Congress appropriates funds. The plans are compiled under the omnibus 1944 Flood Control Act and without intervention of any regional corporate agency of the Authority type.

(*Continued on page 54*)

Here's trim packaged

... AT



SPACE SAVINGS are often obtained by installing Cabinetrol as part of a wall. This unit, in a pumping plant, controls low-voltage power for lighting and auxiliaries. Ready accessibility is a feature of Cabinetrol which results in important maintenance savings. Hinged doors, front and back, permit easy access, and they can be locked.

CENTRALIZATION OF CONTROL, with a pre-engineered Cabinetrol layout like this, simplifies plant operations, gives greater assurance of service continuity, and harmonizes in appearance with other modern equipment.

Buy all the BONDS you can
—and keep all you buy

Co-ordinated
WATER PLANT
ELECTRIFICATION

(*Continued from page 50*)

"Recent experience in the operation of public water supplies," says *Health News,* weekly bulletin of the New York State Dept. of Health, "indicates a definite need for closer co-operation between local water supply officials, health officers and district sanitary engineers in developing programs for expeditious handling of emergencies and other problems of mutual concern."

Emergencies, resulting from floods, sudden leakages in supply conduits, etc., have not been handled entirely satisfactorily and the Department of Health has issued the following recommended outline of policy.

Basic responsibility for effective supervision and operation to assure delivery of water of safe sanitary quality rests with the owner of a public water supply system. Court decisions have established that a municipality, water company or any owner of a public water supply system may be held responsible for damages which may accrue through negligence proved in a court of record. The city of Olean, for instance, was sued by citizens who contracted water-borne typhoid fever as a result of negligence on the part of city officials.

The New York municipal, village and town laws contain definite provisions regarding the duties and responsibilities of water supply officials in the operation of publicly owned water supply systems. Furthermore the State Sanitary Code charges the owner of a public water supply with responsibility for compliance with the requirements of the Code, irrespective of the type of ownership of the supply. Court decisions have established the necessity of exercising due diligence in operating public water supply systems so as to assure the delivery of water of safe sanitary quality and also the right to collect for damages when negligence has been proved.

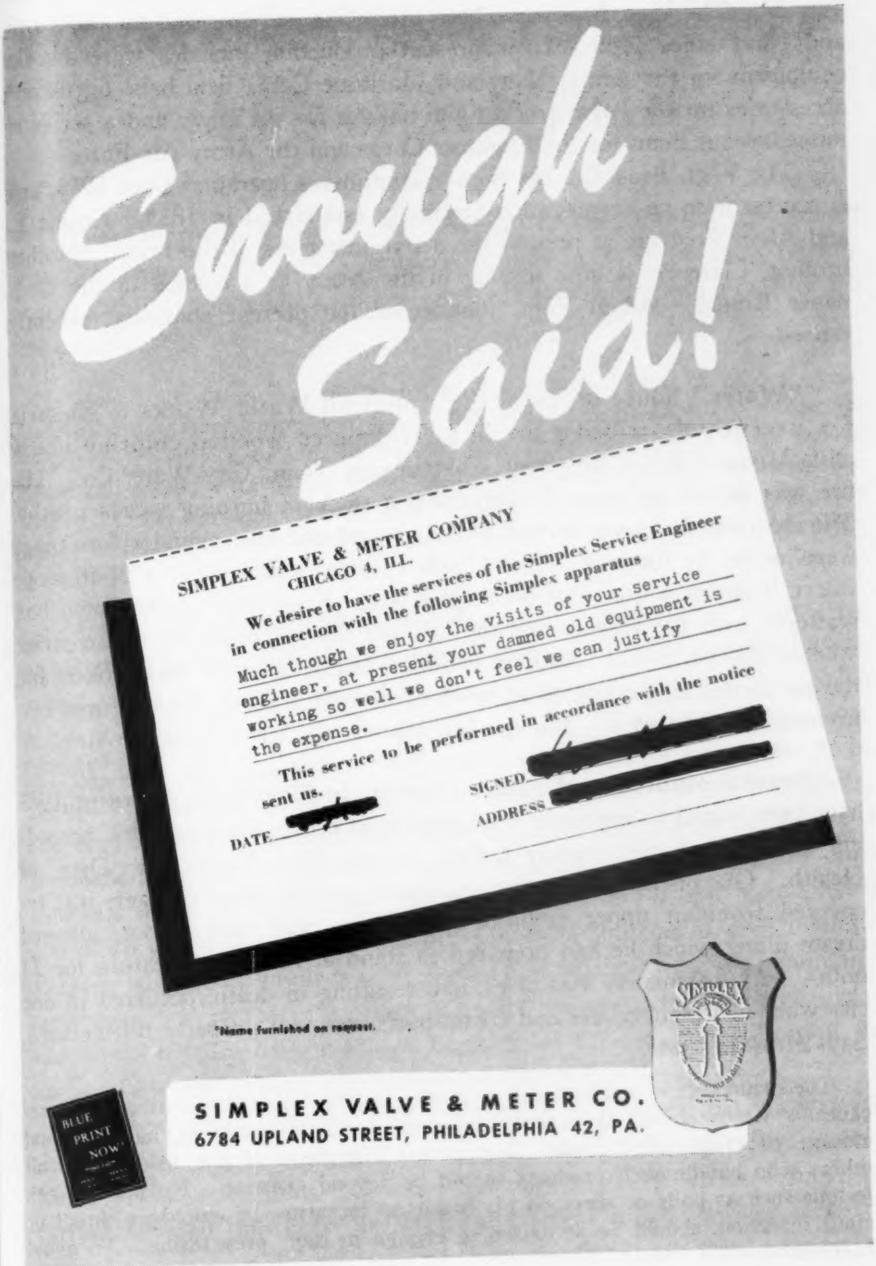
In general, it is the duty of the local health officer, under normal conditions, to satisfy himself that water of safe bacterial quality is furnished to consumers and, during periods of emergency, to exercise his influence through official action in the interests of the public health.

The Public Health Law and the State Sanitary Code give the local health officer or board of health ample power to take such steps as may be necessary to protect the health of the public under their jurisdiction.

The district engineers of the Division of Sanitation are available as advisers to boards of health and water supply officials. . . . Water supply officials should plan also for the utilization of facilities made available under the Mutual Aid Program through zone co-ordinators and through the district engineers who are also assistant zone co-ordinators.

"Armco Products for Engineering Construction" is a collection of twenty bulletins under one cover, recently issued by Armco Drainage & Metal Products, Inc., Middletown, Ohio, from which the book may be obtained on request. A special index co-ordinates "Kind of Construction" with "Suggested Products." Under the second heading appear the numbers of the bulletins in which the suggested products are described. Fourteen "Kinds of Construction" directly relate to water supply and sewage treatment. Photographs, cross-sections and tabular specifications are included.

(*Continued on page 56*)


Enough Said!
SIMPLEX VALVE & METER COMPANY
CHICAGO 4, ILL.
We desire to have the services of the Simplex Service Engineer in connection with the following Simplex apparatus
Much though we enjoy the visits of your service engineer, at present your damned old equipment is working so well we don't feel we can justify the expense.
This service to be performed in accordance with the notice sent us.
SIGNED [redacted]
ADDRESS [redacted]
DATE [redacted]
*Name furnished on request.
BLUE PRINT NOW
SIMPLEX VALVE & METER CO.
6784 UPLAND STREET, PHILADELPHIA 42, PA.

(*Continued from page 54*)

The Vogt Bros. Mfg. Co. was awarded the Army-Navy "E" on July 27. The Vogt Bros. have been producing war material for the Army and Navy since 1940. Their present production includes water works equipment for the Army, Navy and Maritime Com., field bake ovens and accessories for the Army, rocket gun nozzles for the Navy and a series of miscellaneous items for the Engineer Corps and the Army Air Force.

The Vogt. Bros. Co. has been in continuous operation since 1915, and is successor to an organization originally established in 1833. Ernest L. and Alvin Vogt are at present the active managers of the firm. Another brother, Clarence, is now serving in the Army as a colonel in the Ordnance Branch. Adam Vogt, founder of the present company, recently retired.

"Water," house organ of the American Water Works & Electric Co., recently described a fire in a tar-papered wooden chlorine house at its Missouri Ridge Reservoir, Chattanooga, Tenn., City Water Co. The fire was started by stray flinders from a stack of burning weeds nearby. The chlorine house was leveled to the ground and four cylinder fuse plugs were melted by the heat. One 110-lb. cylinder rolled down a $2\frac{1}{2}$-ft. slope where it struck a 4-in. cast-iron valve box. Fragments of the valve box scattered over the vicinity and the cylinder flew through the air to strike a house 200 yd. away. Another cylinder, full of chlorine, was broken and the gas turned all the nearby growing green things brown, and injured two firemen who inhaled it. The fire brigade was too late to stem the fire.

Several outbreaks of gastro-enteritis in New York State in 1945 have been traced to improper refrigeration of cream-filled pastries, according to *Health News,* weekly bulletin of the New York State Dept. of Health. One of the most severe outbreaks resulted when a baker, just recovered from an upper respiratory infection and sore throat, allowed cream filling which he had prepared to stand at room temperature for 24 hours. Approximately 100 cases, one resulting in death, occurred in one city when chocolate eclairs and cream puffs were not properly refrigerated. Says *Health News:*

> The recurrence of epidemics of this type justifies re-emphasis of certain precautions which should be strictly observed in the preparation, handling and storage of cream-filled foods. The personal hygiene of the bakers and all others who handle such products should be beyond question. No person with lesions such as boils or sores on his hands or forearms, or with sore throat or sinus infection, should be permitted to engage in their preparation. To avoid bacterial growth, custard filling should be used soon after preparation and not held without refrigeration for any considerable length of time before the shells are filled. If possible, the pastry should be rebaked after filling. All cream-filled products should be eaten soon after they have been prepared and in the meantime should be stored in a refrigerator, never in a warm room.

NEWS OF THE FIELD

The American Water Works Association, in adopting its Code of Practice, manifested a fully reasonable attitude in its expressions relating to the rights of the public to water service. The closing paragraph of the code reads:

"I shall not, as an incident related to discussions of rates of pay or conditions of employment, suspend or fail to perform the duties entrusted to me, nor permit water service to fail the citizens who depend on me. I shall, having associated myself with public water supply operations, hold the public interest superior to my personal interests and I shall by my acts and by my leadership see to it that water service is maintained under both normal and emergency conditions."

These words have a meaning which greatly needs wider recognition as a general policy. Since active combat ceased in Europe and the Pacific, reconversion has been retarded by a series of civil conflicts presumably initiated in the interest of Labor.

While it would appear to be completely civilized for procedures to be set up to adjudicate peaceably the differences of opinion between employers and employed, for reasons largely political and opportunistic much of our recent national labor legislation appears to make the way easier for open conflicts, which we call strikes. For centuries courts of law have existed whose duty it was to adjudicate differences of opinion in civil matters. Persons who felt themselves injured filed suit against those who had damaged them. Fortunately we have not set these practices aside by legislation which tells the litigant that, if he does not like the court's decision, he can start his own private war against his opponent.

The American Water Works Association has shown that it considers the right of the public to water service is superior to any other interest which affects operations. Strictly speaking the same attitude must be carried forward into every level of employment in any service industry which by its size or lack of competition is essential to the life and work of those who use the service.

It is this idea of the essentiality of certain services to civilized ex-

(*Continued on page 2*)

(*Continued from page 1*)

istence which is implicit in the legislation proposed by Senators Ball and Hatch along with former Senator, now Justice, Burton. This bill (S1171) contains a section which confers upon the proposed Labor Relations Board power "to require the parties to accept temporarily a compulsory settlement of their labor relations controversy so as to avoid any interruption to the supply of a commodity or to a service on which the community affected is so dependent that a severe hardship would be inflicted on a substantial number of persons by either a brief or prolonged depreciation of such commodity or service. The Board is authorized and directed to find that severe hardship would be so inflicted in case of any serious or protracted interruption of a *public utility* or other public service, or of the service of an essential food such as milk, or of the supply of an essential fuel such as coal or oil, or in case of any serious or protracted interruption in any other supply or service on the continuity of which the health, safety or welfare of a community depends."

Arbitration of labor conflicts in these fields is made compulsory by the terms of the bill. It is a vital piece of legislation and one to which much opposition has been expressed by labor leaders who prefer the present situation.

It is in complete accord with the A.W.W.A. Code of Practice. No wiser thing could be done by any member of this Association than to write his Senator or Congressman and express support of such a law. Without such control upon the parties in labor controversies, life in this country cannot go on upon the production level of which it is capable.

Every water works executive and every responsible water works employee has one prime objective—to give the public the service which it needs and expects. Within that basic framework all of us look forward to the development of methods by which both water works labor and water works management will receive full recompense for the work that is done. It is a fair attitude, an equitable attitude and this Association can be proud that it has made its position plain.

(*Continued on page 4*)

(*Continued from page 2*)

Frank Gifford, 67, Secretary of the New England Water Works Association since January 1920, died suddenly on October 5 at his home in Plaistow, N.H. He had been in ill health for the past year and had tendered his resignation to the Association on the previous day, contingent upon the appointment of a successor.

Gifford was born and educated in Fall River, Mass., and worked in the water department there until he resigned in 1915 with the title of Assistant Superintendent. He went from there to the Dedham, Mass., Water Co., of which he was Manager upon his retirement eight years ago. Since then he had engaged in private practice as a public utility consultant. He was also President of the Garden Hose Spray Co., Cambridge, Mass.

In his mature years Gifford took up the study of public utility law and was graduated from the Suffolk Law School in 1930. In November 1944 he was elected to the New Hampshire State Legislature.

(*Continued on page 6*)

(*Continued from page 4*)

Major B. A. Poole, Chief San. Engr. of the Indiana State Board of Health, who has been on leave-of-absence since the summer of 1942, has returned to civilian status and is back at his Indianapolis office. When he first entered the Sanitary Corps he was assigned to the post of Reg. San. Engr. of the 6th Service Command, Chicago. For the past year and a half he has been on duty in the Off. of Chief of Engr., Repairs and Utilities Branch, War Dept., Washington, D.C. There he was in charge of operation and maintenance of all water and sewerage plants at military installations throughout the continental United States.

John G. Montgomery, former civilian San. Engr. for the De Ridder Army Air Base, which was inactivated by the War Dept. in April 1945, is now San. Engr. for the Veterans Administration Central Office, Washington, D.C. Montgomery has been in the water works and sanitary field for a number of years since his first position as Supt. of the Galveston, Tex., Water and Sewer Dept. Immediately preceding his assignment with the War Dept., he was Asst. Chief Engr. of the Layne-Texas Co., water supply contractors, Houston, Tex.

(*Continued on page 8*)

(*Continued from page 6*)

Homer A. Hunter, Supt., Dallas, Tex., Water Dept., was appointed Asst. City Mgr. of Dallas early in July, while **K. F. Hoefle,** Engr. of Constr. and Maint., was made Acting Supt. of the municipal utility. Hunter will continue to be chief executive of the plant while he also co-operates on the formulation of plans for increasing the efficiency of the city administration and works on the development of a postwar program for the Texas metropolis. **J. B. Winder,** Chief Engr. of the Water Dept., and A.W.W.A. Director in 1936–39, expects to retire within the next two years, and present plans are for Hoefle to succeed him.

Gerald E. Arnold, former Regional Engr. of the Fifth Region of the Water Div. of the Office of War Utilities, WPB, covering Montana, Wyoming, Colorado, New Mexico and all states west thereof, has been appointed Assistant City Manager of San Diego.

A public hearing on the rules and regulations proposed by the Ohio Water Resources Board to govern the drilling, operation, maintenance and abandonment of wells to prevent the contamination of ground water resources, will be held on November 21 at 11:00 a.m. in Hearing Room 2, Ohio Departments Bldg., 65 South Front St., Columbus, Ohio.

(*Continued on page 10*)

(*Continued from page 8*)

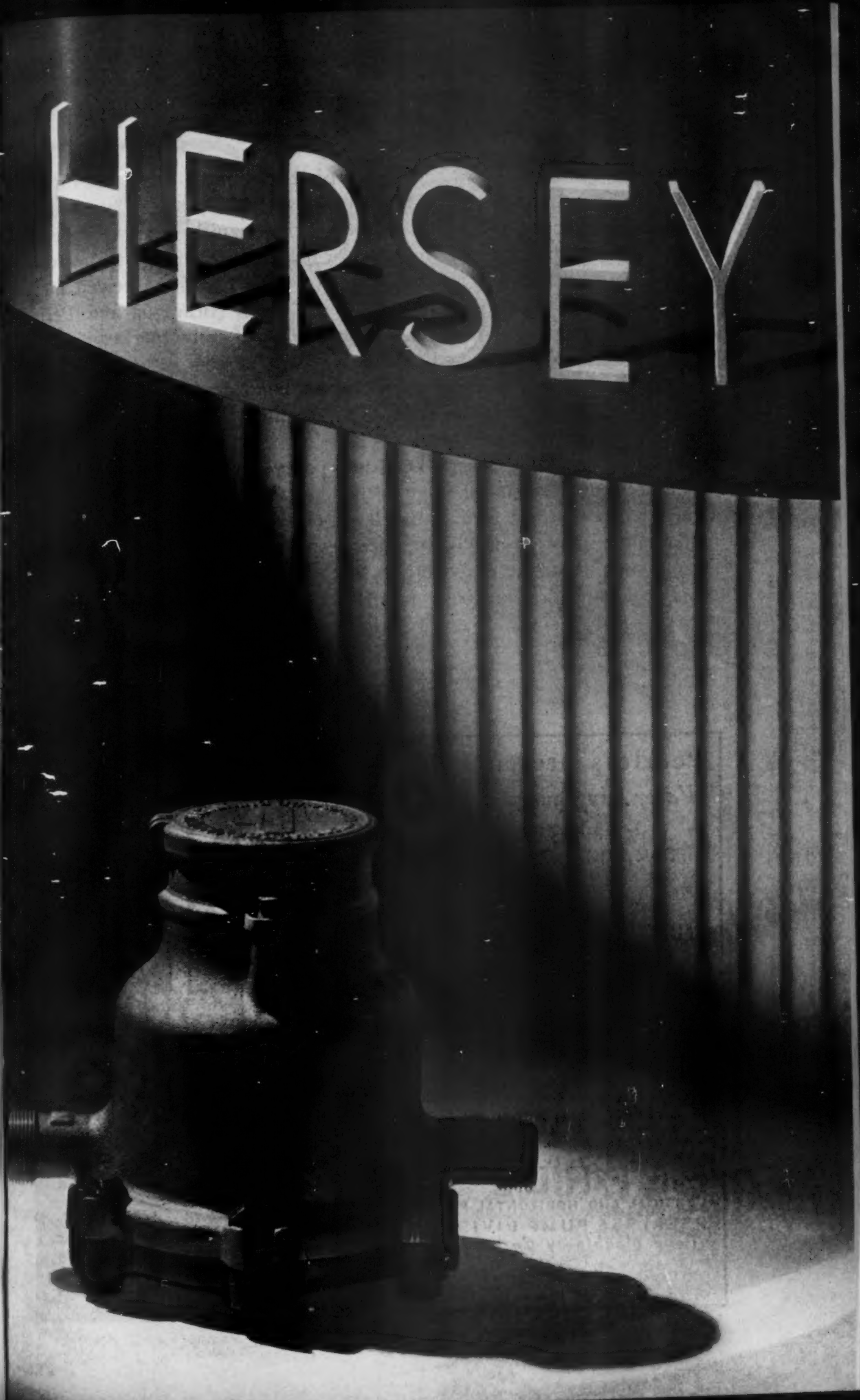
When Major General George C. Dunham, President of the Institute of Inter-American Affairs and Deputy Director of the Office of Inter-American Affairs, was succeeded by Col. Harold B. Gotaas in September, he was eulogized by Wallace K. Harrison, Director of the Institute, in the following terms:

"The wartime efforts of General Dunham and his colleagues in building hemisphere defenses against disease and hunger entitle him to a place of honor alongside the other great medical figures of the Americas—Walter Reed, William Crawford Gorgas, Carlos Finlay, Oswaldo Cruz and Carlos Chargas.

"Under his able direction, co-operative inter-American health and food programs have been established by agreement with eighteen of the other American republics. Such programs have made possible the development of health centers, anti-malarial projects and food supply programs for the benefit of rubber workers, miners, farmers and the Armed Forces of the United Nations."

General Dunham is known as the "flying doctor of the Americas," because of his annual average of 100,000 mi. of air travel to visit more

(*Continued on page 12*)


HERSEY

(*Continued from page 10*)

than 1,000 health, sanitation and food projects organized under his direction. He has retired because of a heart ailment which makes continuation of such flights impossible. He received the Distinguished Service Medal with a Presidential Citation for "performing exceptionally meritorious service in a position of great responsibility." He has also received high national honors from Bolivia, Brazil, Chile, Haiti, Nicaragua and Peru.

Colonel Gotaas has made nine official trips to Latin America, visiting each country at least once, and several of them a number of times. Upon assumption of his new office, Colonel Gotaas announced that there would be no change of pace in the activity of the Institute. Its agreements with various governments run through 1948.

"We will continue General Dunham's policy of regarding each national health problem as a hemisphere problem," he said. "Better health, as well as better nutrition and food, is the desire of everyone. There is no limitation on the supply of health for which people must compete. In developing our own health we contribute to that of our neighbors. In this food supply and nutrition are basic factors. Better health enables people to

(*Continued on page 14*)

(*Continued from page 12*)

produce and consume and to raise their standard of living. This brings better national economy and sounder international trade."

Colonel Gotaas was born in Mellette, S.D., in 1906, and holds civil engineering degrees from the Univ. of South Dakota and from Iowa State College at Ames and he has received a doctor's degree in San. and Public Health Eng. from Harvard Univ. Before joining the Army in 1942 he was Professor of Public Health Eng. at the North Carolina Graduate School of Public Health, Chapel Hill. Bolivia and Chile have decorated him for his services in inter-American affairs.

News hot off the wires in a recent edition of the *New York Sun* was headed "Fire Hazard in 1686 Met With Buckets." The story in its entirety read:

By 1686 the fire hazard of New York City had become such a problem the city fathers ordered every citizen having two chimneys on his house to have at least one fire bucket near at hand. If he had more than two chimneys he must have two buckets. Every baker and brewer must have six fire buckets filled with water at all times or be fined six shillings.

(*Continued on page 16*)

(*Continued from page 14*)

Lt. Col. Jack J. Hinman Jr., C.E., is now on duty in the Yokohama-Tokyo area. Colonel Hinman, Assoc. Prof. of Sanitation at the Univ. of Iowa, and a Past-Pres. of the A.W.W.A., has been in the Pacific for the past year, and before that was attached to the Chemical Warfare Board at Edgewood Arsenal, Md., and was commanding officer of an extensive secret project off the coast of Florida.

Twelve hints on fire hose conservation recently appeared in a broadside issued by a hose manufacturer, who recommends:

Immediate unpacking of new hose, examination for possible damage incurred during shipping and loose rewinding of hose.

Refolding and rearrangement of hose at least once a month.

Reasonable care during use to keep hose out of places where oils or acids may have accumulated, to avoid laying hose where it may be run over by vehicles and to avoid sharp curves or supports which may cut into hose.

Prompt eradication of acid or paint, which may happen to spot cotton

(*Continued on page 18*)

(*Continued from page 16*)

hose jacket, as these substances will deteriorate the cotton. Sodium bicarbonate or tri-sodium phosphate concentrate will neutralize acids.

Prompt removal of gasoline, oils or greases, which will dissolve bond between cover and tube. Mild alkali or soap solution may be used on these substances. Hose connections should never be lubricated with oil or grease.

Prompt cleaning of hose after use. It may be brushed clean, or scrubbed with plain water if necessary. Couplings may be spun in soapy water.

Thorough drying in drying tower or inclined rack before refolding—never in sunlight or on hot surface.

Adequate ventilation, dryness and coolth for hose in storage.

Careful handling of frozen hose, which should be moved as little as possible while frozen and should be thawed slowly indoors.

Avoidance of rapid opening and closing of valves, which may induce water hammer, causing hose to weaken.

Annual testing of hose at a minimum pressure of 150 lb.—higher if the normal hydrant pressure is higher—and a minimum period of three minutes.

(*Continued on page 20*)

(*Continued from page 18*)

Accurate records of each length of hose, with date of purchase, dealer, brand, dates and results of tests and any unusual characteristics or repairs.

The foregoing tips are briefed from a pamphlet issued by the B. F. Goodrich Co., Akron, Ohio.

A working model of a chlorine-alkali plant in actual operation has been donated by the Pennsylvania Salt Mfg. Co. to the Franklin Institute in Philadelphia, where it is on display, and a twelve-page pamphlet entitled "Salt of the Earth," describing the model, is being distributed by the company. The center spread is a photographic keyed illustration of the model, and graphic sections appear on the other pages of the booklet, helping to clarify the descriptions of the various processes. A three-dimensional model of the chlorine atom is included in the Franklin Institute display, and "Salt of the Earth" shows some of the current conceptions and the origin of the chemical and physical properties peculiar to this element.

"Salt of the Earth" may be obtained upon request from the Pennsylvania Salt Mfg. Co., 1,000 Widener Bldg., Philadelphia 7.

(*Continued on page 22*)

(*Continued from page 20*)

The Johns-Manville Corp. is planning a new research center of six buildings on a 93-acre plot near Bound Brook, N.J., as the first project in a $40,000,000 postwar expansion program. The program is expected to provide 25 per cent more jobs than were formerly available in the company's most successful prewar year.

The research center will provide "experimental factories" and pilot plants for the speeding-up of materials development. There will be a research laboratory and administration building, two combination laboratory-factory buildings, a research engineering and machine shop building, a water filtration and waste processing building and a garage and stores building. Each of the combination laboratory and experimental factory units will be staffed by a worker-scientist team, whose mission will be to solve some special building materials or industrial products development problem. Experimental manufacturing research work will be carried on adjacent to the laboratories. Experimental manufacturing work on such products as asbestos-cement pipe, asbestos shingles, asbestos wall boards, etc., will be done simultaneously with laboratory research and on semi-large-scale or full-size equipment, because the durable properties of these

(*Continued on page 24*)

(*Continued from page 22*)

products depend as much upon how the ingredients are mechanically put together as they do upon the ingredients themselves.

There will be a glass-enclosed promenade down the center of the laboratory building, from which the building's chief research scientist will be able to keep under observation at all times the simultaneous operations of the various worker-scientist teams.

MINNESOTA SECTION REGIONAL MEETINGS

The cessation of the war came so close to the previously-chosen meeting dates that it was not practical to cancel the already scheduled regional meetings and replan for a Section Meeting. Therefore, the Minnesota Section held these meetings: one at Mankato, Minn., on September 11; one at Fargo, N.D., on September 14; and one at Duluth, Minn., on September 18. The total registration of 157 was much greater than had been hoped for. President L. N. Thompson, H. S. Grove, Minnesota Director, A. M. Kircher, Section Chairman, and two or more trustees were able to be present at each meeting. The programs were planned so as to cover the problem of most importance in the vicinity of each meeting.

At Mankato a paper was given by W. J. Bell, Wallace & Tiernan Co., Inc., on "Red Water—Its Cause and Cure." Bell pointed out that each supply is an individual problem and that, although the sanitary chemical analyses of two supplies might be nearly identical, different types of treatment might be needed to obtain satisfactory results.

A. M. Kircher explained some of the water problems at Mankato where the capacity of the wells had dropped as much as 90 per cent. By the discharge of heavily chlorinated water into them, the original capacity was restored to the wells.

E. M. Grime, Water Service Engr., Northern Pacific R.R., St. Paul, told of his "Difficulties With Iron in Deep Well Water Supplies" (see page 1173, this JOURNAL).

(*Continued on page 42*)

Desperate Call!

There has been tremendous and gratifying membership response to the Association's appeal for rare numbers of the JOURNAL for war-torn libraries and for libraries cut off from communication with the "outside world" during the Occupation. The Association has now shipped overseas a number of volumes completed by the acquisition of these rare copies. This leaves the shelves empty of the following issues, which are needed to complete more sets, still needed overseas.

Vol. 31	No. 1	January 1939
	No. 3	March 1939
	No. 4	April 1939
	No. 10	October 1939
Vol. 33	No. 1	January 1941
	No. 2	February 1941
	No. 7	July 1941
Vol. 34	No. 1	January 1942
Vol. 36	No. 3	March 1944
Vol. 37	No. 2	February 1945

Won't you please go over your shelves and see if you can part with any of the above issues of the JOURNAL. If you feel that you can, send them, but *only* them, immediately to the American Water Works Association, Inc., 500 Fifth Ave., New York 18, N.Y. Receipt will be acknowledged by a check in payment, to the amount of $.50 per copy.

DO NOT SEND COMPLETE VOLUMES TO ASSOCIATION HEADQUARTERS. The headquarters office has an unbalanced stock and needs certain numbers with which to complete volumes. It has no use for JOURNALS NOT listed above. If you have complete volumes of the JOURNAL which you wish to dispose of, record the fact with headquarters by letter. It may then be posible for headquarters to ask you to ship such volumes directly to a purchaser.

American Water Works Association
Incorporated
500 Fifth Avenue, New York 18, N.Y.

Changes in Membership

NEW MEMBERS

Applications received September 1 to 30, 1945

★ *denotes military service*

Ballard, W. C., *see* Bedford, Town of

Barclay, L. W., Public Relations Director, Dept. of Water & Power, 207 S. Broadway, Los Angeles, Calif. (Oct. '45)

Barnhill, Hobart, *see* Kingsville Water Dept.

Bedford, Town of, W. C. Ballard, Town Mgr., Municipal Bldg., Bedford, Va. (Corp. M. Oct. '45)

Blackshaw, George E., Mgr., South Bay Consolidated Water Co., Inc., 21 N. Ocean Ave., Patchogue, N.Y. (Oct. '45)

Briggs, R. E., Industrial Chemist, 167 W. Bonita Ave., San Dimas, Calif. (Oct. '45)

Cary, Glen R., Water & Sewage Chemist, 1916 Grant St., Denver, Colo. (Oct. '45)

Coleman, Earl L., Repr., Worthington-Gamon Meter Co., 1016 King Rd., Ashland, Ohio (Oct. '45)

Colvin, Herbert A., Mgr., South Bay Consolidated Water Co., Inc., 89 E. Main St., Bay Shore, N.Y. (Oct. '45)

Cook, Norman C., Labor Supervisor, North Jersey Dist. Water Supply Com., Glenwild Ave., Bloomingdale, N.J. (Oct. '45)

Dienst, George A., Supt., Water & Light Dept., Moorhead, Minn. (Oct. '45)

Dolson, Frank E., Distr. Engr., St. Louis County Water Co., 6600 Delmar Blvd., University City 5, Mo. (Oct. '45)

(*Continued on page 30*)

(*Continued from page 28*)

Fitchett, John A., Dist. Engr., Johns-Manville Sales Corp., 618 Continental Oil Bldg., Denver, Colo. (Oct. '45)

Fox, George Miller, Mgr., South Bay Consolidated Water Co., Inc., Main St., Westhampton Beach, N.Y. (Oct. '45)

Galveston Water Works & Sewerage Dept., Henry Wilkins Jr., Supt., Galveston, Tex. (Corp. M. Oct. '45)

Halden, H. O., H. O. Halden Co., 221 Plaza Theatre Bldg., Kansas City 2, Mo. (Oct. '45)

Hines, Richard N., Supt., Elec. & Water Dept., Municipal Bldg., Edenton, N.C. (Oct. '45)

Hoeren, Fred A., Secy. to the Chief Engr., North Jersey Dist. Water Supply Com., 53 Northfield Ave., West Orange, N.J. (Oct. '45)

Jonesboro Water & Light Plant, Neal B. Thayer, Mgr., 411 S. Union St., Jonesboro, Ark. (Corp. M. Oct. '45)

Jud, Eric Peter, Supt., Acueducto de Maracaibo, Aptdo. 53, Maracaibo, Venezuela, S.A. (Oct. '45)

Kaan, Edward, Purchasing Agent, New Jersey Dist. Water Supply Com., Wanaque, N.J. (Oct. '45)

Keith, W. R., Supt. of Water, Beecher Metropolitan Water Dept., 1049 Louis Ave., Flint 5, Mich. (Oct. '45)

Kingsville Water Dept., Hobart Barnhill, Kingsville, Tex. (Corp. M. Oct. '45)

Liedholz, G. W., Dist. Mgr., National Aluminate Corp. (Chicago), 1315 Fountain St., Ann Arbor, Mich. (Oct. '45)

Macdonald, Frank W., Chief, Water Supply & Waste Disposal Section,

(*Continued on page 32*)

(*Continued from page 30*)

State Board of Health, Civil Courts Bldg., New Orleans, La. (Oct. '45)

Millis, John B., Engr., State Water Survey Div., 1955 E. 73rd Pl., Chicago 49, Ill. (July '45)

Normile, Nicholas J., Supt. of Filter Plant, Bureau of Water, City Hall, Watervliet, N.Y. (Oct. '45)

North Mankato Water Dept., M. R. Wigley, Water Comr., North Mankato, Minn. (Corp. M. Oct. '45)

Ohio Water Resources Board, C. V. Youngquist, Chief, 706 Ohio Depts. Bldg., Columbus 15, Ohio (Corp. M. Oct. '45)

Pierce, D. O., Civ. Engr., 1819 Wood St., Alameda, Calif. (Oct. '45)

Powell, Marcus P., Asst. Prof. of Sanitation, Dept. of Hygiene & Preventive Medicine, 279 Medical Lab., Iowa City, Iowa (Oct. '45)

Quinn, Robert J., Mathieson Alkali Works, Inc., Ocala, Fla. (Oct. '45)

Raffety, Sidney Robert, Cons. Water Works Engr., Rofe & Raffety, 3 Victoria St., Westminster, London, S. W. 1, England (July '45)

Reeves, Ralph B., City Engr. & Water Supt., Chanute, Kan. (Oct. '45)

Ryan, Alfred J., Crocker & Ryan, 1231 First National Bank Bldg., Denver 2, Colo. (Oct. '45)

Schleicher, William A., Chemist, Dept. of Conservation, Game & Fish Div., Frankfort, Ky. (Affil. Oct. '45)

Siebert, Harry J., c/o Barringer Hotel, Charlotte, N.C. (July '45)

(*Continued on page 34*)


GET READY NOW—
TO LAY PIPE FAST
ALCO ELECTRIC-
WELDED STEEL PIPE
is the Pipe to Lay
ALCO ELECTRIC-WELDED STEEL PIPE is extensively used and extremely popular. And for good, solid reasons!
It is strong, dependable, durable, long-lived. It is smooth, gives maximum flow and capacity. It is light in weight, easy to handle—comes in long lengths, requiring minimum joints—advantages that mean faster, lower-cost installations.
Don't wait for the postwar flurry. Plan now to use ALCO ELECTRIC-WELDED STEEL PIPE for water, sewer, gas and oil lines. Now is the time to get ready. Tell us your requirements and let us help you.
American Locomotive
ALCO PRODUCTS DIVISION
30 Church Street, New York 8, N. Y.
Dunkirk, N. Y.
BUY WAR BONDS

(*Continued from page 32*)

Smith, Elmer L., Asst. Engr., Water Dept., 319 City Hall, Pasadena 2, Calif. (Oct. '45)

Springer, H. E., Supt., Water & Light Dept., Box 215, Chisholm, Minn. (Oct. '45)

Stidwell, L. P., Civ. Engr., 520 Sydney St., Cornwall, Ont., Can. (Oct. '45)

Thayer, Neal B., *see* Jonesboro Water & Light Plant

Vander Velde, T. L., Asst. Engr., Dept. of Health, Lansing 4, Mich. (Oct. '45)

Veazey, Worth, Chief Operator, Filter Plant, Russell Manufacturing Co., Alexander City, Ala. (Oct. '45)

Wigley, M. R., *see* North Mankato Water Dept.

Wilkins, Henry, Jr., *see* Galveston Water Works & Sewerage Dept.

Winters, Daniel L., Chemist, Gulf Public Service Co., Inc., Main St., New Iberia, La. (Oct. '45)

Youngquist, C. V., *see* Ohio Water Resources Board

REINSTATEMENTS

Kessler, Lewis H., Hydr. Eng. Lab., Univ. of Wisconsin, Madison, Wis. (June '30)

Rynders, Arthur, Mech. Engr., City Engr.'s Office, City Hall, Milwaukee, Wis. (July '37)

LOSSES

Resignation

Cox, K. E. (Miss), Director, State Hygienic Lab., Charleston, W.Va. (July '40)

Deaths

Acres, H. G., Pres., H. G. Acres & Co., Cons. Engrs., 2135 Culp St., Niagara Falls, Ont., Can. (June '27)

Cadmus, Peter H., Supt. of Shops & Meters, Water Dept., City Hall, East Orange, N.J. (Affil. Oct. '38)

Ferguson, S. F., 1611 Richmond Ave., Columbus 3, Ohio (Assoc. M. Apr. '44)

Scott, R. D., Acting Chief, Lab. Div., State Dept. of Health, 1650 Essex Rd., Columbus 8, Ohio (Oct. '38) *P*

(*Continued on page 36*)

(*Continued from page 34*)

Simantel, Alvin, 4374 Woodland Ave., Western Springs, Ill. (July '35)

True, Albert O., San. Engr., Denim Branch, Proximity Mfg. Co., Greensboro, N.C. (Aug. '22)

Changes in Address

Changes of address between September 5 and October 5, 1945

Asketh, Jordan S., *see* Ranney Water Collector Corp. of New York

Ayala H., Juan Pablo, Departmento de Estudios y Proyectos, Instituto Nacional de Obras Sanitarias, Caracas, Venezuela, S.A. (Jan. '41)

Bacon, Vinton W., Asst. San. Engr. (R), Malaria Control in War Areas, U.S. Public Health Service, 605 Volunteer Bldg., Atlanta 3, Ga. (Jan. '41)

Barbeito, Arturo Auderut, Civ. Engr., Administracion Nacional del Agua, Charcas 1840, Buenos Aires, Argentina, S.A. (Jan. '45)

Berk, Ralph G., Hydr. Engr., 119 Belvoir St., Alexandria, Va. (July '41)

Booth, A. A. K., East Smithfield, Pa. (Oct. '40)

Branson, William S., 1458 S. Third St., Louisville 8, Ky. (Jan. '40) *M*

Brooks, John N., 845 Berkeley Ave., Trenton 8, N.J. (Feb. '12)

Carl, Kenneth J., 7 Harris Court, Bellmore, N.Y. (Oct. '41)

Carmien, R. P., Coast Agent, Golden-Anderson Valve Specialty Co., 2017 El Cerrito Pl., Los Angeles 28, Calif. (Oct. '34)

Caster, Arthur D., San Engr., 488 Meadoway Park, Worthington, Ohio (Jan. '42) *MP*

Corbin, Malcom D., 17565 Schaefer Rd., Detroit, Mich. (Apr. '43)

Critchlow, H. T., Chief Engr., State Dept. of Conservation, Div. of Water Policy and Supply, Trenton Trust Company Bldg., Trenton 8, N.J. (Feb. '30) *P*

Davidson, Edwin F., 95 Tyler St., Sylacauga, Ala. (July '44)

Davidson, James B., Jr., 807 Fayetteville St., Van Buren, Ark. (Jan. '44) *M*★

(*Continued on page 38*)

(*Continued from page 36*)

Dillery, R. E., Supt., Water Works, Guthrie, Ky. (Jan. '43)

Gotaas, Harold B., Col., Sn.C., Pres., Institute of Inter-American Affairs, 499 Pennsylvania Ave., Washington 25, D.C. (Jan. '38) *P*★

Harvill, Henry J., Supt. of Water & Sewerage, 322 N. 12th St., Edinburg, Tex. (Jan. '45)

Hopkins, O. C., Maj., San. Engr., 1204 Park Ave., Richmond, Va. (Jan. '37)★

Irwin, Wm. F., Sales Repr., Louisville Cement Co., 2012 Observatory Ave., Cincinnati 8, Ohio (Oct. '38)

Keef, Walter L., Box 402, Hot Springs, Ark. (Oct. '43) *AMP*

Kelso, Gilbert L., 1117 E. College St., Iowa City, Iowa (May '30) *P*

Koyl, E. G., Field Engr., Infilco, Inc., Box 35, Northside Branch, Atlanta, Ga. (Jan. '43)

Leach, Walter L., c/o Havens & Emerson, 1520 Woolworth Bldg., 233 Broadway, New York 7, N.Y. (July '43) *P*

Montgomery, John Gilmour, San. Engr., 1738 Riggs Pl., N.W., Washington 9, D.C. (Oct. '43) *M*

Nelson, Thurlow C., *see* New Jersey Dept. of Conservation

New Jersey Dept. of Conservation, Div. of Water Policy and Supply, Thurlow C. Nelson, Chairman, Rutgers Univ., New Brunswick, N.J. (Corp. M. Apr. '36)

Parrish, Dorothy M. (Mrs.), Box 205, University Station, Fayetteville, Ark. (Oct. '44)

Perazzo, Roberto J., Civ. Engr., Administracion Nacional del Agua, Potosi

(*Continued on page 40*)

Extremely economical and durable!

K&M "Century" ASBESTOS-CEMENT PIPE

FREE FROM:

- Tuberculation
- Electrolysis
- Corrosion

Built to stand up under the most extreme conditions! That's why engineers like to specify K&M "Century" Asbestos-Cement Pipe for jobs where endurance counts. Its flexible couplings make it highly adaptable to varying conditions.

WHERE ECONOMY IS A FACTOR...

K&M "Century" Asbestos-Cement Pipe saves money because its light weight makes for easy hauling and quick installation. It can be installed by inexperienced crews.

ARMY E NAVY

K&M best in asbestos

Nature made Asbestos

Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON

COMPANY • AMBLER • PENNSYLVANIA

(*Continued from page 38*)

4052, Buenos Aires, Argentina, S.A. (Jan. '45)

Quick, James L., San. Engr., 420 W. Fredonia Ave., Peoria 5, Ill. (Jan. '45)

Quinn, Joseph L., Jr., Asst. to Pres., Hulman & Co., Terre Haute, Ind. (Oct. '41)

Ranney Water Collector Corp. of New York, Jordan S. Asketh, Engr., 33 W. 42nd St., New York 18, N.Y. (Assoc. M. July '42)

Rau, William J., 24 Nassau Blvd., S., Garden City, N.Y. (Jan. '36)

Rohlich, Gerard A., 211 S. Barnard St., State College, Pa. (July '44) *P*

Schroepfer, George J., Prof. of San. Eng., 123 Main Eng. Bldg., Univ. of Minnesota, Minneapolis 14, Minn. (July '43) *M*

Thompson, H. M., Southern States Chemical Co., 175 Spring St., S.W., Atlanta, Ga. (Jan. '38) *P*

Wintz, Edward R., c/o General Delivery, Inyokern, Calif. (Oct. '40)

R. D. Wood Co., Public Ledger Bldg., Independence Square, Philadelphia 5, Pa. (Assoc. M. Apr. '84)

Welch, Donald L., 1250 W. 83rd St., Chicago 20, Ill. (Apr. '43) *P*

Wylam, Clarence C., 7522 Kirtley Drive, Cincinnati 15, Ohio (Apr. '44) *MP*

Young, Joseph E., 3345 Emerson Ave., S., Minneapolis, Minn. (Affil. Jan. '43)

(*Continued from page 24*)

At Fargo, water softening was the main topic. H. J. Sowden, Supt., Water & Light Dept., Fergus Falls, Minn., gave a paper on the softening plant there, where a raw water of from 180 to 250 ppm. alkalinity is reduced to about 70 ppm. He recommended that, when a new softening plant is installed, the alkalinity should be dropped gradually. Otherwise, bathers may suffer from intense itching if they fail to rinse off all the suds. In Fergus Falls, just this occurred and several citizens were so disturbed that it looked for a while as though there might be several damage suits brought against the city.

A report by H. H. Behlmer, Asst. Supt., Fargo Water Dept., told of postwar plans for enlargement of the plant there. The blueprints incorporate all necessary equipment for continued softening.

At Duluth, O. E. Brownell, San. Engr., Minnesota State Dept. of Health, talked on "Numerical Rating of Water Supplies." Brownell distributed a chart which showed the factors used in the rating, which, although not yet perfected, he hopes to have much improved in a year or two.

(*Continued on page 44*)

(*Continued from page 42*)

E. C. Slagle, St. Louis County Health Dept., Duluth, spoke on the causes of epidemics and the steps necessary to correct them.

L. N. Thompson, Water Engr. and Supt., St. Paul, delivered a message on the importance of the municipal water works selling itself to the public. Needed in such a program are courtesy, not only towards the public but also within the company, and pride in water works property. Thompson suggested that signs mark the plant, buildings, etc., and that employees wear uniforms.

O. E. Brownell of the Minnesota State Board of Health was nominated for the Fuller Award for "his long and faithful service to the state as a public health engineer, his interest in advancing the profession by his work in the Water Works Operators' School, his faithful work in the Minnesota Section for years and particularly his study of steel water tank maintenance."

R. M. Finch,
Secretary-Treasurer

(*Continued on page 46*)

(Continued from page 44)

ROCKY MOUNTAIN SECTION MEETING

The nineteenth annual meeting of the Rocky Mountain Section was held in the Shirley Savoy Hotel, Denver, Colo., on September 21 and 22. Ninety water works and equipment men and guests were registered, of which 46, including two new members, belonged to the Rocky Mountain Section.

President L. N. Thompson addressed the meeting on the activities of the A.W.W.A. and the part which water works will take in the postwar program. He placed special emphasis on the necessity of selling the importance of water works to the public by advertising and through good public relations. Pointing to training schools for plant operators, he recommended similar schools for personnel who meet the public from behind the counter.

B. V. Howe, Colorado State San. Engr., presented a paper on "Hard Water Tax." He pointed out that there is need for softening water in many municipalities in the Rocky Mountain region and explained the con-

(Continued on page 48)

(*Continued from page 46*)

siderable savings that could be made in soap and other costs by the installation of softening methods. In a discussion which followed, however, Dana E. Kepner, San. Engr. and Mfr.'s Repr., emphasized the variations in the problem as each city faces it, and asserted that in some cities where only partial softening is needed it is more economical to have softeners on the hot water lines in individual homes.

A discussion of "Powers of Utility Commissions" was offered by R. L. Sherard, Water Supt., and C. A. Lathrop, City Attorney, Cheyenne, Wyo. The Cheyenne water department is operated under a six-man board of public utilities. The board has functioned extremely satisfactorily and has done away with political changes in operating personnel. The board now has full power to operate the water department, although at one time there was instituted a law suit to prevent the board from taking over such operations.

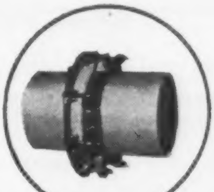
Major John J. Franks, Omaha, Neb., spoke on "Threshold Limits on Corrosive Waters." He demonstrated the characteristics of waters typical of the Rocky Mountain region and, by data, attempted to show that the Langlier threshold test does not always correctly indicate whether or not the water will be corrosive.

Emery L. O'Connell, Denver Attorney, described the necessary procedure for the formation of sanitary districts, and presented much information of interest to those involved in recently-formed or projected districts.

Paul Sandberg, Deputy Auditor of Denver, described in considerable detail the system of accounting used by his city.

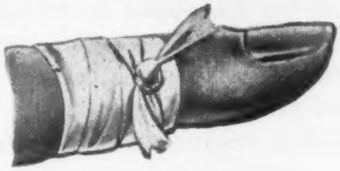
Joseph A. McCarthy, Chief of Laboratory, Lawrence Experiment Station, offered a paper on chlorine dioxide which was read by Dana E. Kepner. McCarthy cited several experimental uses of chlorine dioxide for

(*Continued on page 50*)



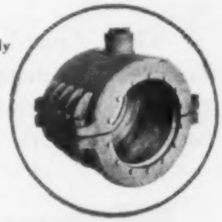
Style 60—for repairing bell and spigot joints: 3" to 60" sizes.

Don't forget to order

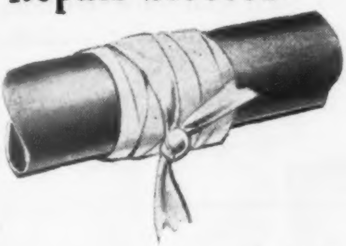


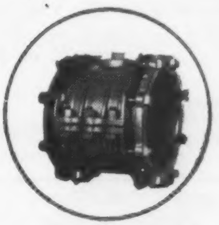
Style 82—adjustable repair sleeve, for CIP distribution lines, from 4.70" to 9.07" OD.

Repair Sleeves



Style 96—to permanently repair defective joints, splits or holes in steel pipe, 12" to 24" OD.





Style 57—for repairing breaks in straight run of cast-iron pipe, 2" to 12" sizes.

We needn't remind you what leaking water lines can do to roadbeds, railroad crossings, bridges and other public construction . . . but we should remind you to place orders for Dresser repair clamps and split repair sleeves as early as possible.

The repair sleeves shown above represent only a small portion of the complete line of Dresser repair products. No matter what type of leak or break occurs in your lines, Dresser has or can make the proper type of repair clamp or sleeve.

When the war is over—or earlier, if permitted—we will again be able to make prompt shipments from complete stocks. Until that time comes, let us know your requirements as far ahead of time as possible. Your orders will be entered on our production schedules immediately.

Dresser Manufacturing Division, Dresser Industries, Inc., Bradford, Pa.; Houston Office and Warehouse, 1121 Rothwell Street, Sec. 16, Houston, Texas; in Canada: Dresser Mfg. Company, Ltd., 60 Front St., West, Toronto, Ontario.

DRESSER **REPAIR CLAMPS and SLEEVES**

(Continued from page 48)

the reduction of tastes and odors and stated that it can be successful in such application, although each water supply presents an individual set of conditions and laboratory experiments should precede plant tests. Some increase in taste and odor may occur when treatment is started, due to oxidation of pipe slimes, but this soon fades out. McCarthy pointed out that disinfection should be completed before chlorine dioxide is added, and too much reliance should not be placed on the higher chlorine residual carried in waters thus treated, as more studies are needed to determine the full extent of the effect of this treatment on bacteria. Operating costs for such treatment may be expected to amount to something between the cost of super-chlorination and of activated carbon. Higher chlorine residuals, which persist longer, may be carried in the finished water without taste or odor.

G. E. Arnold, Regional Engr., War Production Board, San Francisco, discussed the manpower and materials situation, and described the termination of the priorities system. He then continued with some comments on postwar work and outlined the various methods of financing available,

(Continued on page 54)

Insure Public Satisfaction

Be certain that your community always gets palatable water. Use Hydrodarco as your purifying agent. It is the quality activated carbon with the adsorptive action that eliminates odors and disagreeable tastes. Standardize on Hydrodarco for dependable performance at low cost.

DARCO
CORPORATION

60 East 42nd Street, New York 17, N. Y.

Distributing Points: **New York Buffalo Cincinnati Chicago St. Louis Kansas City San Francisco Los Angeles Marshall, Texas**

(*Continued from page 50*)

pointing to accumulated savings and to government aid. He added a footnote to President Thompson's speech on better public relations for the water works industry with the suggestion that someone design a streamlined fire hydrant of more attractive appearance than those now in use.

A discussion of DDT brought out the fact that, although this material is used in very low concentrations, any application on a large scale should be made by an individual familiar with its use, as there are certain hazards, such as burns or explosions, which may be encountered.

O. J. Ripple,
Secretary-Treasurer

MICHIGAN SECTION MEETING

The seventh annual meeting of the Michigan Section was held at the Pantlind Hotel, Grand Rapids, on September 19 and 20. The meeting, which was held jointly with the Michigan Conference on Water Purification, drew 152 persons.

(*Continued on page 56*)

(*Continued from page 54*)

Plans for the meeting were made within the four weeks immediately preceding it. On August 8, the Section had been informed by the Committee on Conventions that the application for holding the meeting was not approved. However, the startling events of the next week resulted in a quick liberalization of convention restrictions and on August 22 the executive officers of the Section authorized the local arrangements committee and the program committee to proceed with plans. The meeting differed from preceding ones in that it was two days long, instead of three. Another departure was the inauguration of the club-room type of entertainment, replacing the older room type. The innovation was a success with members and manufacturers' representatives alike, and the Entertainment Committee and the Water and Sewage Manufacturers' Association decided to continue the same set-up at future meetings.

T. L. VanderVelde, Michigan Dept. of Health, opened the discussion with his paper on experiences with water treatment in various towns in the state. Discussions of experiences with their own water supplies were added by Henry Gork of East Grand Rapids, Lee Sensabaugh of Muske-

(*Continued on page 58*)

(*Continued from page 56*)

gon, Louis Harrison of Bay City, J. E. Cooper of the Ford Motor Co., H. E. Smith of Adrian, Henry La Fountain of Marquette and F. L. Glashaw of St. Ignace. The majority opinion appeared to be that super-chlorination (free chlorine residuals) has many advantages, especially in respect to the safety of the supply, taste and odor reduction, color removal and algae control. Free chlorine residuals could also be carried in the distribution systems without the use of ammonia. It was concluded that super-chlorination warrants a trial at all plants now using chlorine. Several persons entered the discussion with the report that phenol could be oxidized with chlorine without developing a taste, while experiences varied widely on the reduction of tastes and odors resulting from algae. Super-chlorination appeared not to be the complete answer in solving such problems and some supplemental treatment, such as with carbon, was indicated.

R. J. Faust, Chief of the Div. of Water Supply, Bureau of Eng., Michigan Dept. of Health, presented his annual review of newsworthy events in Michigan water works. Of particular interest was the beginning of fluoride treatment of the Grand Rapids water supply on Jan. 25, 1945. The cost of the treatment is averaging about 6½ cents per capita per year.

Norman Billings, Geology Div., Michigan Dept. of Conservation, and John Ferris, U.S. Geological Survey, delivered a paper on "Geology in Relation to Ground Water Supplies." They offered an outline of the water-producing structures of the state and described how some of them are formed. They explained how ground water yields may be determined and why local ground water resources are sometimes depleted. The services of their divisions were offered to water works officials of the state who need help in solving ground water supply problems.

Dr. W. C. Bauman, Dow Chemical Co., Midland, presented a paper on "Synthetic Resins" (see page 1211, this JOURNAL).

(*Continued on page 60*)

(*Continued from page 58*)

Andrew Dempster, San. Engr., Detroit Dept. of Health, gave a unique presentation on "Back-Siphonage and Cross-Connections," by relating the history of the development of a fictitious war-constructed town. Colbank, located on the banks of the Coliform River, encountered all of the plumbing and cross-connection difficulties known so well to us today. How Mayor E. Typhosa solved these difficulties was fully described.

Louis Ayres, Cons. Engr., Ann Arbor, defined the advantages and faults of new and old pumping equipment in "Some Problems Connected With Electrical Pumping" (see page 1166, this JOURNAL).

John Dye continued his discussion of pH and alkalinity in relation to the control of a lime-soda softening plant. He exhibited a set of nomographs showing the relation between pH and alkalinity in water under a wide range of temperature and total solids and made some suggestions concerning possible applications of the nomographs.

Dr. F. S. Leeder, Director, Bureau of Epidemiology, Michigan Dept. of Health, in his paper "Water May Be Dangerous," complimented the water works profession in Michigan for its splendid record of no water-borne typhoid fever in the state during the past eleven consecutive years and indicated the possibility that some virus diseases may be water-borne.

Harry Ward, Chemist, Wyandotte Filtration Plant, discussed "The Application of Chlorine Dioxide to Municipal Water Supplies," and reported that he was favorably impressed with the results obtained in the reduction of tastes and odors during the short period of time it has been applied to the Wyandotte supply.

The meeting closed with reviews of papers given at the Inservice Training Course at Ann Arbor last April. Harry McEntee, Ann Arbor, discussed papers on iron bacteria, chemistry of iron in water and iron removal, while W. L. Harris, Grand Rapids, discussed papers on fluorides and dental decay.

An inspection trip was arranged for the conferees to observe the methods used in the handling, application and control of fluorides at the Grand Rapids filtration plant.

Raymond J. Faust was nominated for the 1945 Fuller Award.

RAYMOND J. FAUST,
Secretary-Treasurer

(*Continued on page 62*)

(*Continued from page 60*)

The 1945 South Dakota Water and Sewage Works Conference will be held at Mitchell, S.D., on December 6 and 7, with headquarters at the Lawler Hotel, according to a recent announcement by Quinton B. Graves, Acting Director, South Dakota State Board of Health, Pierre, S.D.

The Southern States Chemical Co. has purchased a large tract of land on Marietta Rd., Atlanta, Ga., where it expects to construct a new warehouse and office within the next year. The Southern States Chemical Co. was formed on Oct. 1, 1944, to take over the business released by the Industrial Chemical Div. of the Hercules Powder Co. when that organization retired from the less-than-carload field. The new company now handles carloads of several items which Hercules Powder Co., has discontinued in the Southeast, including aluminum sulfate, liquid chlorine, copper sulfate, ferric sulfate, ammonia and activated carbon.

H. M. Thompson, who was Resident Mgr. of the Atlanta office of Hercules for seventeen years, is president of the new company, and eleven of the twelve staff members are former "Herculites."

NEWS OF THE FIELD

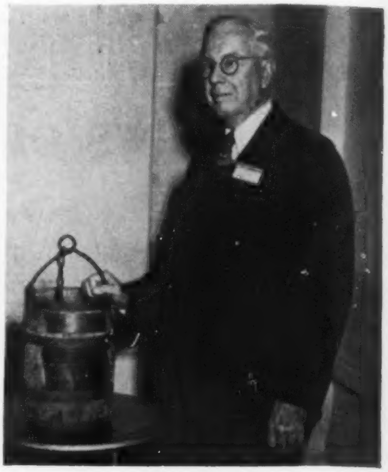
During 1945, the A.W.W.A. has undertaken new responsibilities of a nature which will undoubtedly affect its future materially and serve to benefit all water works men. The first rather simple step is the affiliation of the A.W.W.A. with the U.S. Chamber of Commerce. Affiliation with another association is not so important as the attitude involved in the act. By this step the A.W.W.A. has recorded itself to be a part of the business life of the American community. It hopes that every water department and company will take part in the local Chamber of Commerce activities. More than that it believes that local Chambers of Commerce will come to understand better the vital relationship between adequate water supply and community growth.

Industry and water supply depend upon each other for their growth and no American city or its Chamber of Commerce can get very far ahead if the city's water supply is deficient. Thus when the A.W.W.A. became a member of the U.S.C. of C., it made plain its belief that water supply is a part of business and industry—gaining as a result of joint action—failing because of inefficiency or lack of understanding. We propose to move forward.

The second step taken during 1945 was the acceptance of the challenge that we make public relations a part of our organized activities. One of the peculiar byproducts of the growth of municipal ownership has been the idea that a municipal plant had no public relations problem or that it had no reason to try to improve its relations with its customers. The A.W.W.A. has for many years opposed such opinions, but has not previously felt that organization of a public relations program was a task for the Association. Now a "Survey" Committee is at work—and will bring a set of recommendations to the Board of Directors at the January 1946 meeting. What definite projects for 1946 will be approved by the Board no one can prophesy—but that a postwar public relations improvement program is on its way, there is no doubt. Let us all hope that we understand that in this, as in many other matters, the A.W.W.A. can only show the way, cut the pattern as it were, and that only at the level of the individual water department or company can a public relations program actually go to work and achieve results. The A.W.W.A. can plan or organize. The Water Works Man must and will "make friends and influence people."

(Continued on page 2)

(Continued from page 1)



For the seventh time in its seven-year history as an Association award, the Old Oaken Bucket was won by the California Section for having the highest section membership in the A.W.W.A. The award was made at the section meeting held in October, and is here displayed by William W. Hurlbut, Cons. Engr., Los Angeles, and Past-Pres. and Honorary Member of the Association.

The Old Oaken Bucket is customarily carried to the Annual Convention by the California Section and thereupon reawarded to the Section. Then it is carried back to California for another year. California Section membership on June 30 was 655. Its nearest competitor is the New York Section, with 529 members on the same date.

(Continued on page 4)

Desperate Need for Scarce Journals

There has been tremendous and gratifying membership response to the Association's appeal for rare numbers of the JOURNAL for war-torn libraries and for libraries cut off from communication with the "outside world" during the Occupation. The Association has now shipped overseas a number of volumes completed by the acquisition of these rare copies. This leaves the shelves empty of the issues listed below, which are needed to complete more sets, still required overseas.

Won't you please go over your shelves and see if you can part with any of these issues of the JOURNAL. If you feel that you can, send them, but ONLY them, immediately to the American Water Works Association, Inc., 500 Fifth Ave., New York 18, N.Y. Receipt will be acknowledged by a check in payment, to the amount of $.50 per copy.

DO NOT SEND COMPLETE VOLUMES TO ASSOCIATION HEADQUARTERS. The headquarters office has an unbalanced stock and needs certain numbers with which to complete volumes. It has no use for JOURNALS NOT listed above. If you have complete volumes of the JOURNAL which you wish to dispose of, record the fact with headquarters by letter. It may then be possible for headquarters to ask you to ship such volumes directly to a purchaser.

Vol.	No.		Vol.	No.		Vol.	No.	
31	1	January 1939	32	1	January 1940	34	1	January 1942
	2	February 1939		2	February 1940			
	3	March 1939		3	March 1940	35	1	January 1943
	4	April 1939	33	1	January 1941			
	5	May 1939		2	February 1941	36	1	January 1944
	6	June 1939		7	July 1941		3	March 1944
	8	August 1939		9	September 1941			
	10	October 1939		12	December 1941	37	2	February 1945

AMERICAN WATER WORKS ASSOCIATION

Incorporated

500 Fifth Avenue New York 18, N.Y.

(*Continued from page 6*)

O. J. Ripple, Secy.-Treas. of the Rocky Mountain Sec., A.W. W.A., and **B. V. Howe,** Director from the Section, have formed the consulting engineering firm of Ripple & Howe, Denver, Colo. Ripple has also been a Director of the Association, and both men are holders of the Fuller Award from their Section. Ripple & Howe succeeds to the practice of the late Burton Lowther of Denver and is devoted to all phases of water and sewerage work.

Ripple has been Supt. of Filtration for the Denver Munic. Water Works for almost 22 years, during which time filtration plants with a designed capacity of 100 mgd. were constructed. Before that he was hydrographer and draftsman for the Farmers Reservoir and Irrigation Co. He was graduated from Colorado Agricultural College with a Civil Eng. degree in 1909.

After being graduated from the Massachusetts Inst. of Technology, Howe was engaged for a year with the Massachusetts Dept. of Health, two years with Weston & Sampson, Cons. Engrs., Boston, and two years on the Boston water supply. For the past fifteen years, he has been Chief Engr. of the Colorado State Dept. of Health.

(*Continued on page 10*)

(*Continued from page 8*)

Oscar Gullans, former Chief Chemist with John R. Baylis, Physical Chemist at the Bureau of Eng., Chicago, has returned from military service and has been appointed Filtration Engr. at the South District Filtration Plant, Chicago, of which H. H. Gerstein is Chief Filtration Chemist. He was a Lieutenant Colonel in the Chemical Warfare Service at the time of his discharge.

James C. Vaughn, former Supt. of Filtration & Pumping, Hammond, Ind., Dept. of Water Works, is now Prin. Filtration Chemist in the South District Filtration Plant. During the war he served as a Captain in the Sanitary Corps.

David B. Lee, Chief San. Engr., Florida State Board of Health, Jacksonville, has returned to that post after three years in the Sanitary Corps. For nine months he worked on the problem of malarial control on New Guinea when that island was still in the hands of the Japanese. After being hospitalized home he spent a year and a half in the office of Inter-American Affairs as consultant on malarial control in South America. He retired with the rank of Major.

(*Continued on page 12*)

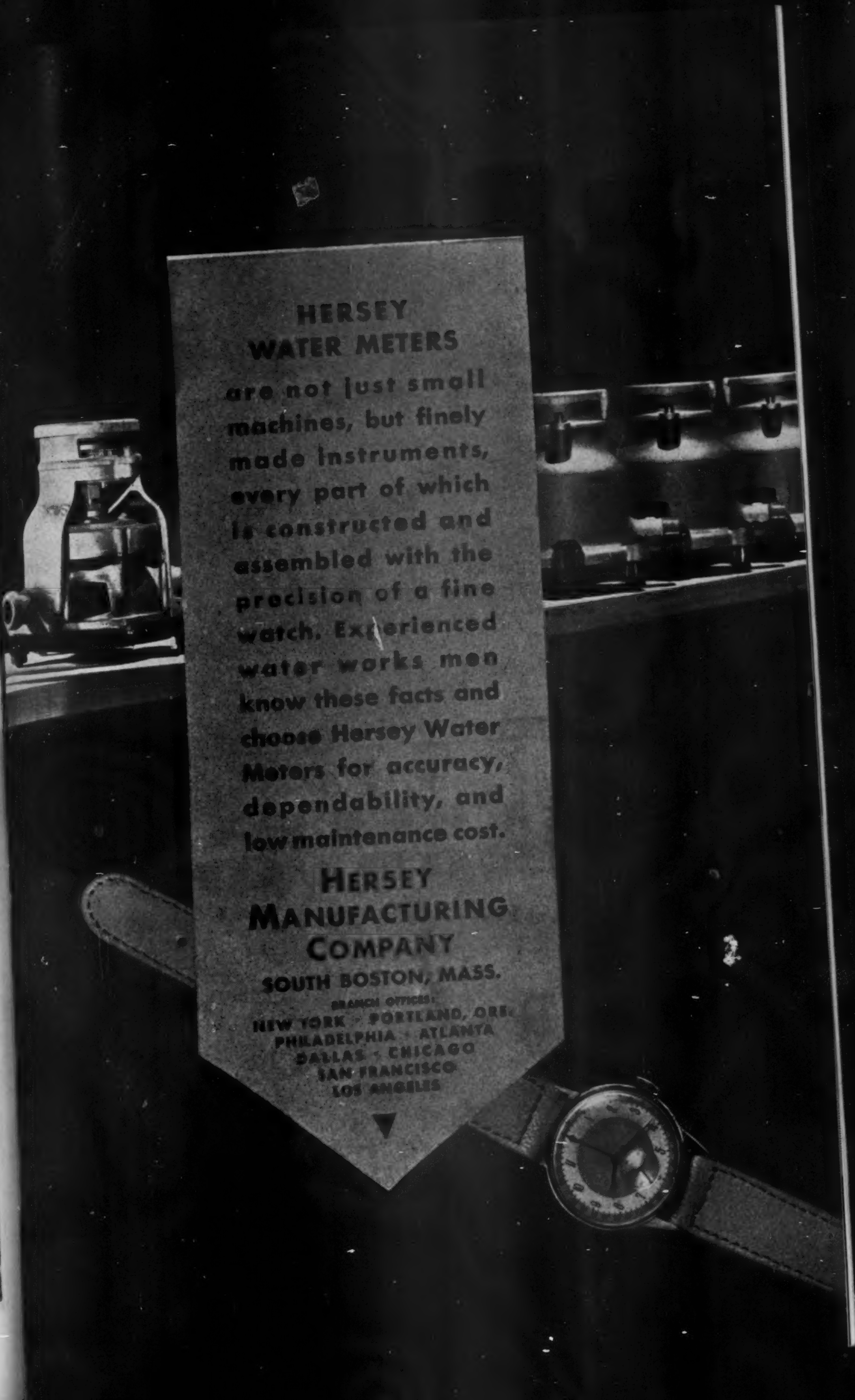
(*Continued from page 10*)

Samuel H. Hopper, former Asst. Prof. of San. Eng., School of Public Health, Univ. of North Carolina, has been appointed Assoc. Prof. of Public Health at the Indiana Univ. Medical School, Indianapolis. There he is joining Dr. T. B. Rice in the development of a new Dept. of Public Health, which will be particularly oriented towards the sanitation aspects of public health. Hopper will also serve as consultant to the Indiana State Board of Health.

During the war period, Hopper was on active duty as Past Asst. Sanitarian (R) with the U.S. Public Health Service, and was detailed to the Navy, which assigned him to the San. Eng. Service of the War Shipping Administration. Hopper was on duty at the New York office, where he carried on ship inspections with particular reference to the water supply, insect and vermin control and general sanitation.

Herbert M. Ihling has returned to his post as Field Engr. in the Water Construction Div. of the Milwaukee Water Works, after more than three years on duty as a lieutenant in the Civ. Engr. Corps of the Navy. He served at the Naval Operating Base, San Diego, Calif., where he was

(*Continued on page 14*)


HERSEY
WATER METERS
are not just small machines, but finely made instruments, every part of which is constructed and assembled with the precision of a fine watch. Experienced water works men know these facts and choose Hersey Water Meters for accuracy, dependability, and low maintenance cost.
HERSEY
MANUFACTURING
COMPANY
SOUTH BOSTON, MASS.
BRANCH OFFICES:
NEW YORK · PORTLAND, ORE.
PHILADELPHIA · ATLANTA
DALLAS · CHICAGO
SAN FRANCISCO
LOS ANGELES

(*Continued from page 12*)

project manager and resident officer in charge of construction. His duties comprised planning new projects, supervision of new construction, maintenance of existing facilities at district headquarters, supply depots, piers and transit sheds, and supervision of safety work and utilities contracts.

Merrill L. Riehl, for the past three years Chemical and San. Engr. for the Repairs and Utilities Branch of the Fifth Service Command, U.S. Army, has joined the Ohio State Dept. of Health as Chemist. He succeeds the late Russell D. Scott, who was Chief Chemist until his death last August. Prior to his work with the Army, Riehl was with the Columbus, Ohio, Div. of Water and also has been Instructor of Indus. and San. Chemistry at Case School of Applied Science, Cleveland.

Charles P. Williams, Cons. Engr. of San Diego, Calif., has been appointed consulting engineer to the Ambursen Engineering Corp. of New York, with headquarters at Houston, Tex. The Ambursen Engineering Corp. is making detailed designs for the Corps of Engrs., U.S. Army, for

(*Continued on page 16*)

(*Continued from page 14*)

the Whitney Dam, a flood control and power dam on the Brazos River, near Hillsboro, Tex. Since 1943, Williams had been Resident Engr. on the Sweet Water Falls Dam for the California Water & Telephone Co. of San Francisco, and in 1941–1943 he was Resident Engr. on the San Vicente Dam for the city of San Diego.

Clinton L. Bogert and Fred S. Childs have formed the firm of Bogert-Childs Engineering Assoc. with offices in New York City and Teaneck, N.J. Both have been in the sanitary engineering field for many years: Bogert was for twenty years a member of the firm of Sanborn & Bogert; Childs was associated with the late George A. Johnson and, more recently, he was Regional Director, Public Works Reserve, Federal Works Agency. The new firm has been retained by the Passaic Valley Water Com. to prepare plans and specifications for the redesign of Beattie's Dam and by the Bergen-Hackensack Sanitary Sewer District Authority on the project report for the first stage of the development of a sewer system to serve 50 municipalities in the Hackensack Valley in Bergen County, N.J.

(*Continued on page 18*)


THE Facts you need -
on
BETTER
WATER
SERVICE
MODERN
WATER
STORAGE
in
ELEVATED STEEL TANKS
by PITTSBURGH · DES MOINES
Write -
FOR YOUR COPY OF THIS NEW 28-PAGE BOOK—JUST OFF THE PRESS . . . . . COMPREHENSIVE, DETAILED, KEYED TO YOUR REQUIREMENTS!
PITTSBURGH · DES MOINES STEEL CO.
PITTSBURGH, PA., 3424 NEVILLE ISLAND—DES MOINES, IOWA, 925 TUTTLE STREET
NEW YORK, ROOM 921, 270 BROADWAY · CHICAGO, 1228 FIRST NATIONAL BANK BUILDING
DALLAS, 1229 PRAETORIAN BUILDING · SAN FRANCISCO, 631 RIALTO BUILDING
SEATTLE, 532 FIRST AVENUE, SOUTH

(*Continued from page 16*)

On October first, the firm of Parkhill, Smith & Cooper, Cons. Engrs., was organized at Lubbock, Tex., by Capt. G. W. Parkhill, M. R. Smith Jr. and S. C. Cooper.

Captain Parkhill is still in service and is now assigned to the U.S. Engrs. in Manila, where he is working on the design of the water works in the Manila area. He was for eight years Prof. of Civ. Eng. at Texas A. & M. and at Texas Tech. He has also had a number of years' experience in municipal engineering design and construction and was for two years a designing engineer for the U.S. Engrs.

Smith has resigned from his post as City Mgr. of Lubbock, effective the first of the year. He has been City Mgr. for the past three years, was City Engr. of Lubbock for the preceding sixteen years and has worked in engineering construction.

Cooper resigned from his position as City Engr. of Big Spring, Tex., in October, after two and a half years there. For seven years, he was City Engr. of Coleman, Tex., and has also been engaged in design for the U.S. Engrs. and on irrigation engineering projects.

(*Continued on page 20*)

(Continued from page 18)

The Hagan Corp. and its subsidiaries, Hall Laboratories and Calgon, Inc., of Pittsburgh, have instituted a plan to encourage their employees to attend night school in order to gain the educations necessary for upgrading. Frankly an investment, the idea originated because of the present scarcity of young chemistry and engineering students, but is expected to be continued after the flow of new men and women is resumed. The plan will be continued, however, only so long as it is felt that the results justify the expense. The way the plan will function is this:

1. Any member of the associated companies who is eligible to register for under-graduate or graduate courses in a field related to the technical or business activities of the companies may participate.

2. On presenting to the company the receipt for tuition and fees, the participant will receive one-half of the sum paid out.

3. If the participant successfully completes the required curriculum and receives a degree while still in the employ of the companies, he will then be paid the remaining half of all receipts for tuition and fees presented to the company during the period from date to the granting of the degree.

(Continued on page 24)

(*Continued from page 20*)

Participation in the scholarship plan will not relieve an employee from regular or emergency duties which may on occasion require him to absent himself from classes, although an effort will be made to interfere as little as possible with the educational program of each participant.

The companies recognize that obtaining an education after working hours is not an easy task to undertake. To obtain a college degree in night school requires at least eight to nine years. However, the companies are encouraged in the program by the number of men and women in their employ who have completed their educations in this way, and thus fitted themselves for better posts in the companies. The secretary of the director of the plan, a woman who already held a bachelor's degree, worked after hours for her master's degree in personnel work. Various technical staff men have obtained degrees in chemistry, chemical engineering and mechanical engineering. One chemist took up law so that he could be of use with respect to Hagan Corp.'s patent activities. And right now the librarian is studying Russian so that he can abstract technical papers from the Russian literature.

(*Continued on page 42*)

Changes in Membership

NEW MEMBERS

Applications received October 1 to 31, 1945
★ *denotes military service*

Adam, William D., Mgr., South Bay Cons. Water Co., Inc., 139 Surf Ave., Port Jefferson, N.Y. (Oct. '45)

Atkinson, Francis W., Supt. of Utilities, Univ. of New Mexico, Albuquerque, N.M. (Oct. '45)

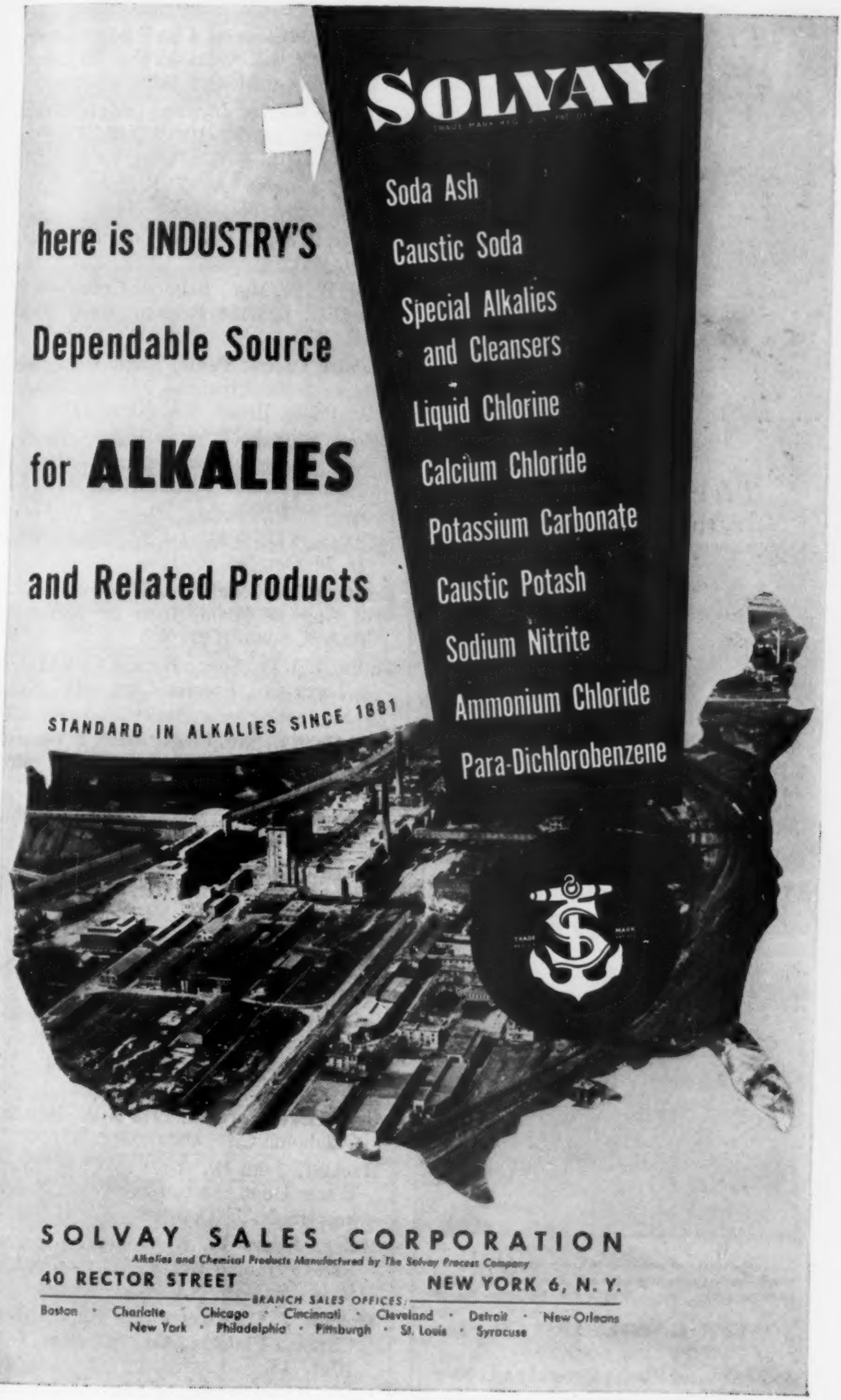
Carey, William G., Public Analyst & Bacteriologist, Public Analyst's Lab., 10 Dean St., Newcastle upon Tyne 1, England (Jan. '45)

Carmack, Mont J., Kanawha Equipment, Inc., Box 1426, Charleston 25, W.Va. (Oct. '45)

Carnegie, S. Steve, Public Health Engr., State Dept. of Health, 207 Civil Courts Bldg., New Orleans, La. (Oct. '45)

Carver, Andy, *see* Carver Pipe Cleaning Co.

(*Continued on page 30*)


SOLVAY
Soda Ash
Caustic Soda
Special Alkalies and Cleansers
Liquid Chlorine
Calcium Chloride
Potassium Carbonate
Caustic Potash
Sodium Nitrite
Ammonium Chloride
Para-Dichlorobenzene
here is INDUSTRY'S
Dependable Source
for ALKALIES
and Related Products
STANDARD IN ALKALIES SINCE 1881
SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 RECTOR STREET
NEW YORK 6, N. Y.
BRANCH SALES OFFICES
Boston · Charlotte · Chicago · Cincinnati · Cleveland · Detroit · New Orleans
New York · Philadelphia · Pittsburgh · St. Louis · Syracuse

(Continued from page 28)

Carver Pipe Cleaning Co., Andy Carver, Mgr., 206 E. Nebraska St., Walters, Okla. (Assoc. M. Oct. '45)

Caviness, Robert L., San. Engr., State Board of Health, 2404 White Oak Rd., Raleigh, N.C. (Oct. '45)

Christy, Charles J., 2 Kingsbury St., Worcester 3, Mass. (Oct. '45)

Crocker, B. A., City Engr., Longview, Tex. (Oct. '45)

Davis, W. P., Mgr., Belmont County Water Dist., Box 158, Belmont, Calif. (Oct. '45)

de Paiva Castro, Paulo, Engr. Inspector, Dept. of Municipalities, 225 Rua Aurea, São Paulo, Brazil, S.A. (Oct. '45)

Eiffert, William T., Sr. Public Health Engr., State Health Dept., 423 Hutton Bldg., Spokane 8, Wash. (Oct. '45)

Ebsary, W. F., Chemist, Dept. of Water & Sewers, 1375 N.W. 1st St., Miami, Fla. (Jr. M. Oct. '45)

Entrecanales, Jose, Prof., National School of Eng. of Spain, Juan de Mena 8, Madrid, Spain (Oct. '45)

Fallin, J. J. O., Supt., Forrest City Water & Light Co., Forrest City, Ark. (Oct. '45)

Fan, Chen I., San. Engr., Black & Veatch, 4706 Broadway, Kansas City 2, Mo. (Jan. '46)

Finlayson, H. B., Mgr., Water & Light, Wynne Wood, Okla. (Oct. '45)

Franklin Contracting Co., Peter I. Zito, Supt. of Asphalt, Clove Rd., Great Notch, N.J. (Assoc. M. Oct. '45)

Fryer, Colin John, Dist. Mgr., Dearborn Chemical Co., 2202—1st Ave., S., Seattle 66, Wash. (Oct. '45)

Griesmeyer, R. W., Sewage & Water Treatment Engr., Electro-Motive Div., General Motors Corp., La Grange, Ill. (Oct. '45)

Groseclose, Herman, 1915 N.W. 38th St., Oklahoma City, Okla. (Oct. '45)

Hackett, John B., Asst. to Chief Engr., Water Dept., 84 S. Cherry St., Poughkeepsie, N.Y. (Oct. '45)

Hales, James L., Asst. Mng. Director, State Planning Board, 517 Commercial Bldg., Raleigh, N.C. (Oct. '45)

Holden, J. C., Chief Power Engr., North Carolina Finishing Co., Salisbury, N.C. (Oct. '45)

(Continued on page 32)

(*Continued from page 30*)

Horn, H. H., *see* Miami Beach Water Dept.

Hougland, V. E., Supt., City of Beloit, Box 536, Beloit, Kan. (Oct. '45)

Huff, Marion E., Foreman, Water Dept., Water Works, 646 Hemphill Ave., N.W., Atlanta, Ga. (Oct. '45)

Kline, Harold, Supt. of Water, City Hall, Cuba, Ill. (Oct. '45)

Lamprecht, Joseph, Cons. Engr., Manlius Rd., Fayetteville, N.Y. (Oct. '45)

Leary, Charles J., 1st Lt., Ordnance Dept., 232 Madison Blvd., Terre Haute, Ind. (Oct. '45)★

Lee, Edward G., Supt. of Water Works, Bowling Green, Mo. (Oct. '45)

Listerman, Roy, Filter Plant Operator, Stillwater, Okla. (Oct. '45)

MacDermond, A. E., Supt., Water, Light & Power Co., 523—3rd St., Sauk Centre, Minn. (Oct. '45)

Mannel, Charles, Civ. Engr., 808 Jackson Bldg., Asheville, N.C. (Oct. '45)

Matlock, J. Ray, Director, School of Civ. Eng., Univ. of Oklahoma, Norman, Okla. (Oct. '45)

McClenaghan, R. A., Civ. Engr., McClenaghan & Barr, Continental-American Bank Bldg., Shreveport, La. (Oct. '45)

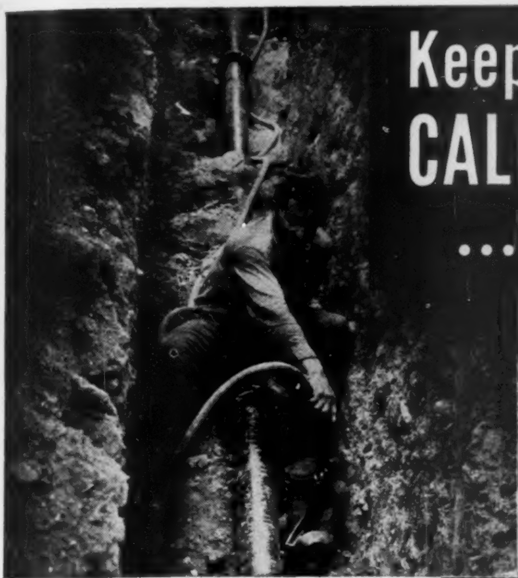
Miami Beach Water Dept., H. H. Horn, Supt., Box 1, Miami Beach, Fla. (Corp. M. Oct. '45)

Morris, Kenneth L., Mgr., New York Water Service Corp., 5 W. Main St., Babylon, N.Y. (Oct. '45)

Northrop & Co., Inc., Guy Northrop, 50 Church St., New York 7, N.Y. (Assoc. M. Oct. '45)

Northrop, Guy, *see* Northrop & Co., Inc.

(*Continued on page 34*)



(*Continued from page 32*)

Ogle, Harry B., Govt. Agencies Sales Engr., Capitol Tractor & Equipment Co., Box 928, Sacramento, Calif. (Affil. Oct. '45)

Paddock Engineering Co. of Texas, J. C. Taylor, Repr., 900 S. Ervay St., Dallas, Tex. (Assoc. M. Oct. '45)

Pullen, P. Q., Field Engr., Electro Rust-Proofing Corp., 1821 Marshall St., Shreveport, La. (Oct. '45)

Rawls, E. M., Civ. Engr., 407 Legal Bldg., Asheville, N.C. (Oct. '45)

Redmond, N. M., Supt. of Constr., Sewerage & Water Board, 5920 Laurel St., New Orleans, La. (Oct. '45)

Richardson, Pat, Service Engr., Johns-Manville Corp., 807 American Bank Bldg., New Orleans, La. (Oct. '45)

Roth, Jay D., Water Supply Engr., City Hall, Miami Beach 39, Fla. (Oct. '45)

Sauderson, S., Water Supt., Arkansas Utilities Co., Marianna, Ark. (Oct. '45)

Smith, F. D., Mgr., Water Co., Booneville, Ark. (Oct. '45)

Street, Haskell R., Chief Chemist & Plant Supt., Water & Sewer Dept., 3821 Memphis St., El Paso, Tex. (Oct. '45)

Strenge, Karl O., Jr., Asst. Chief Engr., Pennsylvania Water Co., 712 South Ave., Pittsburgh 21, Pa. (Oct. '45)

Striger, R. M., San. Engr., Feemster & Striger, 2903 N. State St., Jackson, Miss. (Oct. '45)

Tatum, R. L., Engr., 413 Levy Bldg., Box 843, Shreveport, La. (Oct. '45)

Taylor, J. C., *see* Paddock Engineering Co. of Texas

Teague, R. L., Repr., American Cast Iron Pipe Co., Box 1491, Dallas 1, Tex. (Oct. '45)

Trygg, John E., Regional Engr., State Dept. of Health, Box 576, Lafayette, La. (Oct. '45)

Tucker, A. C., Plant Operator, The Newell Co., Box 43, Newell, W.Va. (Affil. Oct. '45)

VanHasselt, J. A. K., Regional Engr., State Health Dept., Box 1020, Monroe, La. (Oct. '45)

Walton, Wilbur L., Water Softener Service Co., 120 S. La Salle St., Chicago 3, Ill. (Oct. '45)

Ward, Erwin J., Pres., Ada Water Co., Ada, Ohio (Oct. '45)

(*Continued on page 36*)

(Continued from page 34)

Wilcox, Gilbert L., City Mgr., Dover, Del. (Oct. '45)

Winchester, P. S., Munic. Engr., Louisiana Rating & Fire Prevention Bureau, 609 Canal Bldg., Box 730, New Orleans, La. (Oct. '45)

Zietlow, Richard G., Water Inspector, Northern Pacific Ry. Co., 1346—4th Ave., N., Fargo, N.D. (Oct. '45)

Zito, Peter I., *see* Franklin Contracting Co.

REINSTATEMENTS

Bushnell, Charles, 1800 Front St., Scotch Plains, N.J. (Apr. '37)

Duncan, D. L., Engr., California State R.R. Com., 368 State Bldg., San Francisco, Calif. (Aug. '30)

Forrest, Kyle, Cons. Engr., 1504 Russ Bldg., San Francisco 4, Calif. (July '35)

Gilcrest, R. V., Supt. of Utilities, 202 N. Washington St., Wellington, Kan. (Apr. '43)

Harrison, Cecil H., Chief Engr., Water Dept., Box 122, Enid, Okla. (Oct. '39)

Hartwell, Oliver W., Dist. Engr., U.S. Geological Survey, 228 Federal Bldg., Trenton 6, N.J. (Jan. '28)

McAfee, H. D., Power Engr., Lone Star Ordnance Plant, Texarkana, Tex. (Oct. '39)

Riddle, Mary A. (Mrs.), Chemical Research Co., 10976½ W. Pico Blvd., Los Angeles 34, Calif. (July '37)

LOSS

Death

Anderson, A. L., 300 E. Broad St., Falls Church, Va. (Nov. '25)

(Continued on page 38)

(*Continued from page 36*)

Changes in Address

Changes of address between October 5 and November 5, 1945

Antweiler, J. J., Engr. of Distr., Cleveland Div. of Water, 9016 Yale Ave., Cleveland 8, Ohio (June '27)

Arnold, Gerald E., Asst. City Mgr., San Diego, Calif. (Sept. '33) *Fuller Award '39.*

Bardwell, R. A., Service Engr.-Water Chemist, 1202 Sheridan Drive, Danville, Ill. (Jan. '38) *P*

Barrows, R. J., Fidelity Sugar Co., San German, Oriente, Cuba (Jan. '43) *P*

Boriss, Marion E., Capt., 2062—21st Ave., S., Birmingham 7, Ala. (Jan. '44)★

Buck, Ross Willis, Asst. Engr. (R), U.S. Public Health Service, 608 Y.M.C.A., Luckie St., Atlanta, Ga. (Apr. '43) *M*

Connell, C. H., Munic. & San. Eng. Dept., A & M College of Texas, College Station, Tex. (Jan. '38) *P*

Connors, Joseph J., Bacteriologist-Chemist, 2722 Virginia St., Berkeley 4, Calif. (Oct. '42) *P*

Cooper, S. C., Engr., 210 Sanford Bldg., Lubbock, Tex. (Oct. '44)

Corbin, Malcolm D., 17565 Schaefer Highway, Detroit 21, Mich. (Apr. '43)

Davis, Don C., City Engr. & Mgr. of Public Works, Turlock, Calif. (Jan. '41) *M*

Edwards, W. G., Cons. Engr., Box 389, Kerrville, Tex. (Oct. '44)

Egebrecht, Ray F., Mgr., Valve Div., The Filer & Stowell Co., 147 E. Becher St., Milwaukee 7, Wis. (July '43)

Field, Wm. T., Pres., Field, Emerson & Morgan, Inc., 20 Flower Bldg., Watertown, N. Y. (Apr. '10)★

Gamet, Merrill B., Hydr. & San. Engr., Northwestern Technical Institute, Evanston, Ill. (Oct. '44)

Gardner, Leigh O., Designing Engr., 1632 N. 11th Ave., Phoenix, Ariz. (Oct. '42)

Gilman, Harry, Toxicologist, 609 W. 3rd St., Chester, Pa. (Apr. '43) *P*

Glass, John R., 7-H Garden Terrace, North Arlington, N.J. (Jan. '44) *Goodell Prize '44. P*

Hale, Frank E., 1204 Avenue N, Brooklyn, N.Y. (May '08) *Goodell Prize '35. P*

Hamelin, Douglas F., Sunnyside Bldg., Donegal Mansions, Calgary, Alta., Can. (Jan. '45)

Henry, T. B., Cons. Engr., 1812 Wychwood St., Toledo 6, Ohio (Jan. '39)

Hoffman, Howard F., Jr. San. Engr., 510 Terminal Bldg., Rochester 4, N.Y. (Jan. '45)

Hoffman, M. F., 8 Lenox Lane, Cincinnati 29, Ohio (Oct. '34) *Fuller Award '41. A*

Hoppe, T. C., Kimberly-Clark Corp., Eng. Dept., Neenah, Wis. (July '45)

Hopper, Samuel H., Dept. of Public Health, Indiana Univ. Medical Center, 1040 W. Michigan St., Indianapolis 7, Ind. (Oct. '43) *MP*

Hostrup, C. F., Koebig & Koebig, Rowan Bldg., 458 S. Spring St., Los Angeles 13, Calif. (Feb. '30)

Howe, B. V., Ripple & Howe, Cons. Engrs., 710 Colorado Bldg., Denver 2, Colo. (Apr. '30) *Fuller Award '40. P*

Ihling, Herbert M., 205 W. Wilbur St., Milwaukee, Wis. (Jan. '40)

Jacklin, T. W., Vice-Pres. & Director, *Engineering & Contract Record*, 308 W. Washington St., Chicago 6, Ill. (Jan. '41)

Johnson, Jess B., Utility Engr., Manitowoc Public Utilities, 917 N. 17th St., Manitowoc, Wis. (Nov. '31)

Kaiser, Clarence T., San. Engr., Box 743, Columbus 16, Ohio (July '42)

Kroeber, Frederick V., Central States Repr., Inertol Co., 437 N. Orleans St., Chicago 10, Ill. (July '40)

Lamley, George E., Sr. Asst. Supt. Constr., Bureau of Water Supply, 4100 Montana Ave., Baltimore 6, Md. (Oct. '42)

Mace, Harold H., 7112 Garden Rd., Cincinnati, Ohio (Oct. '37)

Maynard, Stuart B., 1617 Granger St., Ann Arbor, Mich. (July '42)

McGowan, John, Eng. Repr., U.S. Fidelity & Guaranty Co., 433 Gilpin St., Denver 3, Colo. (Jan. '41) *M*

McLain, Cecil H., 528A M & M Bldg., Houston 2, Tex. (Jan. '45)

(*Continued on page 40*)

(*Continued from page 38*)

Meissner, William A., Jr., Director of Sales, Silverstein & Pinsof, Inc., 1720 Elston Ave., Chicago 22, Ill. (July '38) *M*

Nelson, Fred B., 16 Ft. Charles Pl., New York 63, N.Y. (July '07) *M*

Parker, Ivy M. (Miss), Sr. Research Chemist, Plantation Pipe Line, Bremen, Ga. (Jan. '45)

Payne Dean & Co., Madison, Conn. (Assoc. M. Oct. '43)

Pepperman, Cecil M., c/o Gannett Fleming Corddry & Carpenter, 600 N. Second St., Harrisburg, Pa. (Apr. '44) *P*

Pierce, E. W., Dist. Sales Mgr., Peerless Pump Div., Food Machinery Corp., Drawer 991, Canton 1, Ohio (Jan. '45)

Poole, B. A., State San. Engr., 4735 Sunset Bldg., Indianapolis, Ind. (Jan. '35) *Fuller Award '42. P*

Posey, Jesse, Jr., 1308 Richard St., Pasadena, Tex. (Jan. '45)

Regnier, R. C., 2914 Boarman Ave., Baltimore 15, Md. (Jan. '42)

Riehl, Merrill L., Chemist, State Dept. of Health, Columbus 10, Ohio (Apr. '40) *P*

Ripple, Oliver J., Ripple & Howe, Cons. Engrs., 710 Colorado Bldg., Denver 2, Colo. (Jan. '30) *Director '40–'43. Fuller Award '42. P*

Robertson, George C., San. Engr., 1965 Coffee Pot Drive, St. Petersburg, Fla. (Oct. '44)

Rohlich, Gerard A., Assoc. Prof. of San. Eng., Pennsylvania State College, State College, Pa. (July '44) *P*

Seeholzer, Bert, Jr., Box 91, Westwood, N.J. (July '35)

Shillinger, Wm. D., Lt., APO 22193, c/o Postmaster, San Francisco, Calif. (Oct. '44)★

Snook, James A., Jr., California Sales Mgr., Rusta Restor Corp., 1040 Broxton St., Los Angeles 24, Calif. (Oct. '41) *M*

Streander, Philip B., Cons. San. Engr., 6390 Drexel Rd., Philadelphia 31, Pa. (Dec. '23) *P*

Snow, Bayard F., U.S.G.C.C., APO 777, c/o Postmaster, New York, N.Y. (Apr. '36)

Trubnick, Eugene H., Capt., APO 704, c/o Postmaster, San Francisco, Calif. (Apr. '44) *P*★

Vaughn, J. C., Prin. Filtration Chemist, South District Filtration Plant, 3242 E. 79th St., Chicago 49, Ill. (Jan. '36)

Waddell, Wm. J., c/o Braemar Lodge, 215—4th Ave., W., Calgary, Alta., Can. (Jan. '45)

Wagner, Edward P., 50 Manfield Ave., Darien, Conn. (Jan. '37)

Whaley, W. J., R.F.D. 7, Greenville, S.C. (Apr. '44) *P*

White, Wm. Wallace, Dept. of Public Health Eng., State Health Dept., 36 E. Second St., Reno, Nev. (July '37)

Williams, Charles P., Ambursen Eng. Corp., 800 Hermann Bldg., 204 Travis St., Houston 2, Tex. (Nov. '32)

MEMBER ENTERING MILITARY SERVICE

Louis, Leo, 5408 W. 15th St., Indianapolis 8, Ind. (Jan. '42) *P*★


LESS LEAKAGE
WITH LARGER CLEARANCES
Sustains Efficiency
Look for
DE LAVAL LABYRINTH RINGS

(*Continued from page 24*)

Philip B. Streander has organized the firm of Philip B. Streander & Affiliates, which will engage in water supply, treatment and distribution consultation. Affiliates in the company are Damon & Foster, Sharon Hill (Philadelphia), Pa., which will handle engineering work in the middle Atlantic states, and Cleverdon, Varney & Pike, Boston, which will secure and direct projects in the New England states. An office has also been opened in Washington, D.C. At the present time, the company is engaged on contracts with Hingham, Mass., and Delaware County, Pa.

For the past five years, Streander has been engaged by Stone & Webster Eng. Corp. of Boston on water supplies and general sanitation work on their large defense and war projects, among which was the one at Oak Ridge, Tenn. From 1933 to 1940, Streander was a partner in the consulting practice of Watson & Streander, New York City.

William A. Meissner Jr., who for the past two years has been officer in chaıge of the Copper Sec., Bureau of Ships, Washington, D.C., has been appointed director of sales for Silverstein & Pinsof, Inc., brass, bronze and aluminum firm of Chicago. Meissner relieves Milton Silverstein, president of the company, who was in charge of sales until October 15.

Prior to the war, Meissner was sales manager for Farnan Brass Works, Cleveland. He went to Washington early in 1942 as chief of the Foundry Production Sec., Copper Div., War Production Board, and was later commissioned Lieutenant in the Naval Reserve.

(*Continued on page 44*)

(Continued from page 42)

Peter C. Reilly, Pres. of Reilly Tar & Chemical Corp. and of Republic Creosoting Co. of Indianapolis, Ind., has recently created the P. C. Reilly Science Fund at Notre Dame Univ. The endowment is $1,000,000, the largest single gift in the history of the university.

The fund will be specifically devoted to chemistry and chemical engineering, and a part of the income has been earmarked for a fellowship to the outstanding lay members of the graduating class in chemistry or chemical engineering departments of Notre Dame; four annual graduate non-teaching fellowships of $1,000 for graduates of any chemistry or chemical engineering schools; and an honorarium of $5,000 annually to an outstanding chemist or chemical engineer for a one-semester series of lectures at Notre Dame.

At the end of eight years, the number of annual graduate non-teaching fellowships will be increased. After 50 years, the income from the accumulated capital fund shall be divided equally, half to be used for fellowships and lectures and half to be added to the capital fund.

Reilly has been a member of the Notre Dame Board of Lay Trustees since 1934. He entered the American coal tar industry in 1886 when he joined one of the original coal tar distillers in the U.S. and was sent from New York to Indianapolis by his employer to manage the Western Chemical Co. In 1900 he organized his own business in Indianapolis under that name, and subsequently reorganized it as the Republic Creosoting Co. In 1932 he purchased the International Combustion Tar & Chemical Co., which operated plants in several states, and which is now a part of the Reilly Tar & Chemical Corp.

The Reilly Corp. maintains research laboratories in Indianapolis, where a large research organization is engaged in the development of new coal tar products. Among the developments of the Reilly laboratories is a process for the complete distillation of coal tar, which has made available many new and valuable materials with wide applications in industry.

(Continued on page 46)

(*Continued from page 44*)

The Illinois State Water Survey at the Univ. of Illinois is this year celebrating a half-century of service to the water supply field, and its Chief, A. M. Buswell, is completing 25 years in his post. The water survey was inaugurated in 1895, when the university's Chemistry Dept. undertook the responsibility of analyzing water supplies in the state in an effort to stem the typhoid epidemics which swept Illinois every ten years. Although the earliest work was in analysis and the establishment of sanitary standards for drinking water, by 1911 the state legislature appropriated funds directly for a State Water Survey, making possible the extension of the laboratory's activities to cover problems in water softening and treatment and stream pollution. At the same time, an inventory of Illinois's water resources was begun.

In 1915, sewage treatment research was begun under Prof. Edward Bartow, then Director. Dr. Bartow, a pioneer in the recognition of the modern activated sludge process, is an Honorary Member of the A.W.W.A.

In 1917, the state legislature transferred the water survey from the university to the Dept. of Registration and Education, but the survey continued to function in close co-operation with the university and to be located in the university's Chemistry Building.

(*Continued on page 48*)

(*Continued from page 46*)

The survey's studies of water resources begun in 1911 were amply validated when the published collection of information was a strong staff to lean on during the drought of 1936 and during the wartime industrial water problems.

During the war, the chemical staff of the survey has co-operated with the university and the Army in developing weapons for detecting and counteracting poisons in water.

The survey plans postwar research to aid in municipal and industrial expansion, flood control, recreation area development and similar projects. The staff totals 30, including several individuals now on military leave, and the biennial budget is $250,000. The survey will soon have its own building on the university campus, but will continue to maintain the close contact with the chemistry, engineering and other departments of the university which it has enjoyed for 50 years.

"Correlation of Ground Water Levels and Precipitation on Long Island, New York," is the title of a paper recently prepared by C. E. Jacob and the Jamaica, N.Y., office of the U.S. Geological Survey and reprinted from the Transactions of 1943 and 1944 of the American Geophysical Union as New York Water and Control Commission Bulletin GW-14. The paper is designed to "justify the use of the cumulative departure from progressive averages for correlating precipitation with ground water levels and with 'ground water flow' in streams, thus combining in a sense the idea of cumulating departures with the idea of using progressive averages." The 24-page pamphlet is profusely illustrated with charts, maps and tables.

The Engineering Experiment Station at Louisiana State Univ., Baton Rouge 3, La., has an opening for a research associate in chemistry or chemical engineering with experience or training in water treatment and an interest in analytical technics. The position will be permanent, with work toward an advanced degree in chemical engineering possible. Anyone interested should address M. C. Schwartz, Asst. Director of the Eng. Expt. Sta., giving details of his education, experience, salary expected, draft status, references and recent photograph.

Cecil H. McLain, former Sr. Research Chemist with J. S. Abercrombie Oil Co., Old Ocean, Tex., has opened his own office as consulting engineer in Houston. He will handle water problems and problems of waste disposal, corrosion of process equipment and pipeline systems. McLain, who holds a B.S. degree in Chem. Eng. from Rice Inst. and an Ll.B. from the Houston Law School, was for ten years with the Sinclair Refining Co. as a chemical engineer.

(*Continued on page 50*)

(*Continued from page 48*)

MISSOURI VALLEY SECTION MEETING

The Thirtieth Annual Meeting of the Missouri Valley Section, its first postwar meeting, was held at the Hotel President, Kansas City, Mo., on October 29 and 30. Registration totaled 166 members and guests.

Following a pattern which was initiated several years ago the program consisted of a series of panel discussions. Topics for these discussions were chosen from the results of a survey which had been made before the 1944 meeting, which was canceled.

"Distribution System Problems" was the topic given to a panel consisting of Mark A. Driftmeir, Supt., Burlington, Iowa, Water Works; H. H. Kansteiner, Mgr. of Production and Distr., Leavenworth, Kan., Water Works Dept.; and C. E. Schanze, Mgr., Joplin, Mo., Water Works Co. Practices in making water main extensions, amount of deposit guarantees required, minimum size of pipe and residual pressures in distribution systems were discussed.

The chief public health engineers of the five states in the Missouri Valley Section area made up the panel which was assigned the topic "State

(*Continued on page 52*)

(*Continued from page 50*)

Board of Health Interest in Water Works." The participants were W. Scott Johnson, Chief Public Health Engr., Missouri Div. of Public Eng. & Ind. Hygiene; A. H. Wieters, Chief Engr., Iowa State Health Dept.; T. A. Filipi, Director, Div. of Sanitation, Nebraska State Board of Health; Paul D. Haney, Chief Engr., Kansas State Board of Health; and Quinton B. Graves, Chief Engr., South Dakota State Board of Health. Official approval of public water supplies, training water plant operators, the new U.S.P.H.S. standards for drinking waters, and the elimination of sanitary defects in water works systems were discussed by members of the panel.

"Procedures Affecting Public Relations in the Water Works Industry" were discussed by a panel consisting of J. J. Hail, Supt. of Water Works, Dubuque, Iowa; Andrew J. Reiff, Supt. of Water and Light Depts., Hastings, Neb.; Robert S. Millar, Mgr., Wichita, Kan., Water Works; and I. H. Reed, Vice-Pres. and Mgr., Sedalia, Mo., Water Co. The discussion was particularly concerned with the methods used to collect delinquent accounts and the procedure followed after the account proved uncollectible. It was the consensus that every possible means should be used to avoid the necessity of shutting off the water service.

The final panel was given the topic "New Horizons in the Water Works Industry." H. V. Pedersen, Supt. and Gen. Mgr. of Water Works at Marshalltown, Iowa, pointed out that among "Personnel and Management Problems" presently confronting the industry were those of retirement of personnel and conservation of sources of water supply. John A. Strang, Div. Mgr. of the Wallace & Tiernan Sales Corp., Kansas City, in a paper entitled "Trends in Sterilization," discussed chlorination. Herbert O. Hartung of the St. Louis County Water Dept. at University City, Mo., reviewed "Trends in Water Purification." Data collected at Army installations on corrosion and incrustation have added valuable knowledge concerning these difficult problems. The sodium arsenite method of differentiating between true and false chlorine residuals as determined by the ortho-tolidine test is proving helpful. As yet silica has not been widely used in the coagulation of water but it offers interesting possibilities.

At the annual dinner of the Section it was announced that the Missouri Valley Section had conferred the George W. Fuller Award on Otto S. Reynolds of Kansas City in recognition of his outstanding work as Chairman of the Membership Committee during the past two years.

EARLE L. WATERMAN
Secretary

(*Continued on page 54*)

(*Continued from page 52*)

SOUTHWEST SECTION MEETING

The Southwest Section held its Thirty-Fourth Annual Meeting in Shreveport, La., October 16–17, with Thomas L. Amiss, Supt.-Engr. of the Shreveport plant, serving as host.

The registration of 212 was low due to the uncertain conditions that prevailed when the meeting was planned. Two full days were devoted to program papers, and the theme running through the entire meeting emphasized public relations and membership promotional work. The sessions were well attended and the program consisted briefly of the following:

Chairman A. H. Ullrich, Chemical Engr., Water Dept., Fort Smith, Ark., read his Annual Report, in which he emphasized the creation of a public relations program on the national level, designed to upgrade the industry. (Later the Resolutions Committee endorsed such a program.) Ullrich also called for more support in membership promotional work to obtain a higher saturation in the Southwest Section. (The Board of Trustees at a post-convention meeting authorized a principal officer of the Section to attend each state meeting to encourage affiliation with the American Water Works Association.)

Amiss briefly reviewed his experiences as a Director of the A.W.W.A. from 1942 to 1945, and the scope of the activities of the national office during the period. Attention was drawn to the efforts of the A.W.W.A., in co-operation with the War Production Board, to gear the water works industry to wartime operations.

Albert R. Davis, present Director from the Southwest Section, and Supt. of the Austin, Tex., Water Dept., outlined some of the activities now under way, emphasizing the work of the Survey Committee in connection with a "Public Relations of the Water Works Industry" program and the "Blueprint Now" program resulting in over 1.5 billion dollars of con-

(*Continued on page 56*)

(Continued from page 54)

struction in the planning stage. Davis also stressed the importance of gaining additional members and greater interest in research activities.

Clyde E. Fant, Comr. of Public Utilities, Shreveport, pointed out the value of applying sound business principles in the operation of a water utility. He revealed how a non-partisan honorary board of seven business men had guided the Shreveport plant through a period of most efficient and successful operation.

A joint paper by W. S. Mahlie, Chemist, and Uel Stephens, Supt. of the Fort Worth, Tex., water system, described how the construction of concrete reservoirs, in lieu of "hard-to-get" additional pumps, solved a distribution problem resulting from increased wartime consumption demands and at the same time provided improvements that will fit nicely into a proposed master plan of distribution.

A. M. Smith, Supt. of Meters and Distribution, Shreveport, recited the splendid results of a concentrated drive to eliminate all cross-connections on the Shreveport system. He reported that in a two-year "crusade" approximately 13,000 inspections were made and 300 violations were found and corrected, thus removing the penalty of a provisional certification of the Shreveport water supply system.

Prof. Edward R. Stapley, Acting Dean, Div. of Eng., Oklahoma A. & M. College, Stillwater, Okla., started off a discussion group with some "Thought Bombs." He made no attempt to furnish the answers, but all of his subjects were thought-provoking. He commented briefly on the following questions: "Human Engineering—Why Not a Little More Attention to the Personnel?" "Depth of Sand in Rapid Sand Filters—Why 30 in.?" "Application of Job Design as Related to Efficiency." "Functions of Management—Why Not More Creative Work?" "Salaries of City Officials and Employees—Why Less Than Private Enterprise?" "Operation of Lakes and Reservoirs—Why Not Have More Recreational Facilities?"

A. P. Jones, Consolidated Chemical Industries, Inc., Houston, Tex., pointed to the rapid expansion of industry throughout the Southwest area, and emphasized that a prime requisite of establishing a new location for industry is the availability of a satisfactory water supply. He reported that the water works men of the Southwest should take steps to furnish industrial requirements to increase their sales.

(Continued on page 58)

(*Continued from page 56*)

Leonard N. Thompson, Pres. of the A.W.W.A., explained the Association's policies and listed the current activities of the parent Association. He stated that the American Water Works Association emerged from the wartime period stronger and better organized than at any time in its history. He particularly stressed the importance of public relations or goodwill and suggested that advertising on a national level, as well as in the local communities, would do much to elevate the industry in the minds of the public served.

E. L. Filby, Cons. Engr., Black & Veatch, Kansas City, Mo., and Chairman of the Survey Committee on Public Relations, described the work of his Committee, pointing out the way to spread goodwill to the public. He emphasized the many benefits that would accrue to the industry and the personnel engaged therein from a sound publicity and public relations program.

H. W. Blakeman, Louisiana Trustee, and Supt. of the Light and Water Plant, Rayville, La., explained the origin and making of the various electrical terms used by water works men. He emphasized the desirability of periodical checking of electrical equipment and listed items of maintenance routine usually required to keep electrical equipment and appurtenances in good operating condition.

K. F. Hoefle, Asst. Supt., Water Dept., Dallas, Tex., showed in his discussion how many of the innovations adopted as a result of manpower shortage during the war had actually improved the efficiency of the department and created customer goodwill. He indicated that bi-monthly meter readings, instead of monthly, and other changes would be maintained as permanent features of operations.

W. H. Sindt, Acting Div. Engr., Bureau of Community Facilities, Federal Works Agency, presented an interesting discussion on "How the Federal Works Agency May Assist in Developing Water Works Facilities." He explained how, through application to the Bureau of Community Facilities, federal funds could be advanced to aid in the preparation of plans for local public work, advising that authorization for said funds was covered by Title 5 of the Mobilization and the Reconversion Act of 1944. He submitted figures allotted to the four states of the Section, but emphasized that sums advanced are to be repaid into the Treasury when and if funds are made available for the construction of the local public works so planned.

The Fuller Award went to Mr. Robert Wolcott Harding for his "untiring efforts in behalf of the Southwest Section, and particularly for his outstanding service in the activation of the Texas Water and Sanitation Research Foundation."

L. A. Jackson
Secretary-Treasurer

(*Continued on page 62*)

(*Continued from page 58*)

Through the reports made in this JOURNAL by Charles F. Meyerherm, member of the Public Water Supply Group of the Radio Technical Planning Board, JOURNAL readers have been kept abreast of the efforts of the A.W.W.A. to promote the establishment of a legal precedent for the use of specified radio wave lengths by water plants in emergencies. *The Pioneer,* house organ of the Niagara Alkali Co., New York City, recently enumerated the services rendered by commercial broadcasting stations to the water supply field. Commercial broadcasters have furthered the industry's efforts:

To educate consumers in conserving water supplies during drought or other emergencies.

To warn users against pollution or contamination of public water supplies; to prevent epidemics.

To notify citizens of approaching flood and/or hurricane; to instruct them in the procedure they are to follow before, during and after the emergency.

To locate and to facilitate the procurement of emergency supplies, medical services and equipment.

To correct false rumors and allay public fears.

To locate missing persons.

To promote campaigns and programs for the public good, such as Fire Prevention Week.

The Pioneer editorializes on emergency use of radio:

Judging from the experience of the water works and electric systems that have been using radio for a number of years and have gone through a variety of emergencies, emergency radio service is a tried and tested tool whose effectiveness and value in safeguarding the public interest and in maintaining, installing or restoring service in emergencies has much more than justified its cost. If this is true of those who bought and used this equipment in the development state, there is every reason to believe that the ratio of benefit to cost will be materially greater for new users of this equipment.

However, the important thing now is to get started thinking about emergency radio service and its possibilities in specific cases of trouble on specific water systems. For the effective emergency communication system must be designed to fit the job, to furnish the service which may be required under a number of radically different emergency conditions, and to function under any and all foreseeable emergency conditions which may exist on a particular water system or in its area of operations.

A completely revised edition of the Taylor combination handbook and catalog contains both simple and technical explanations of the meaning of pH control; specific discussions of the application of pH, chlorine and polyphosphate control to 35 processes, including water purification and sewage disposal; the precautions to be observed in making determinations; and descriptions of all Taylor outfits, including eight new sets. The booklet may be obtained upon request from W. A. Taylor & Co., 7300 York Rd., Baltimore 4, Md.

JOURNAL
OF THE
AMERICAN WATER WORKS ASSOCIATION

VOL. 37, NO. 12 DECEMBER 1945

In this Issue

Published Monthly

at Prince and Lemon Streets, Lancaster, Pa.

by the

AMERICAN WATER WORKS ASSOCIATION

Incorporated

500 FIFTH AVENUE, NEW YORK 18, N. Y.

Published Monthly at Prince and Lemon Sts., Lancaster, Pa.

Entered as second class matter January 23, 1943, at the Post Office at Lancaster, Pa., under the Act of August 24, 1912. Accepted for mailing at a special rate of postage provided for in section 1103, Act of October 3, 1917; authorized August 6, 1918.

Made in United States of America